

Climate Change Awareness and Sustainable Marketing Practices among Students at Pilgrim Christian College

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ABSTRACT

Climate change remains one of the most pressing global challenges of the 21st century, with the Philippines among the most vulnerable due to recurring typhoons, flooding, and sea-level rise. Higher education institutions are tasked with equipping students, particularly in business and marketing, to integrate sustainability into professional practice. This study examined the relationship between climate change awareness and sustainable marketing practices among Bachelor of Science in Business Administration–Marketing Management students at Pilgrim Christian College (PCC). Specifically, it aimed to assess awareness, evaluate sustainable practices, analyze demographic differences, and test the relationship between awareness and practice. Using a descriptive–correlational design, 86 stratified respondents participated through a validated questionnaire and interviews. Results showed that students were generally “Highly Aware” ($M = 3.39$) of human causes and global warming, but less informed on biodiversity and food security. Sustainable marketing practices were also rated “Highly Sustainable” ($M = 3.41$), though gaps were noted in peer advocacy, evaluation of green advertising, and project participation. Significant differences emerged by sex and internet use, with female students and research-driven users showing stronger engagement. Correlation analysis revealed that attitudes toward climate action and access to environmental information significantly predicted sustainable practices ($p < .05$), while knowledge alone did not affect ethical advertising awareness. The study concludes that awareness, while necessary, is insufficient without experiential learning, structured curriculum integration, and peer-led initiatives. Accordingly, the proposed Sustainability Integration in Marketing Education (SIME) framework emphasizes applied projects, institutional partnerships, and advocacy-oriented learning to enhance sustainability literacy and professional practice.

Keywords: *Climate Change Awareness; Sustainable Marketing Practices; Higher Education; Business Administration Students; Experiential Learning; Sustainability Integration in Marketing Education (SIME)*

INTRODUCTION

Climate change stands as one of the defining challenges of the 21st century, and the Philippines is among the most vulnerable nations, facing intensified typhoons, flooding, and sea-level rise. These conditions highlight the responsibility of higher education institutions to cultivate competencies aligned with the United Nations’ Sustainable Development Goal 13 (Climate Action) (Husin et al., 2025). For marketing students, this responsibility is particularly crucial, as their knowledge, values, and business decisions hold the potential to shape consumer behavior and influence sustainability-oriented markets. Despite this urgency, Philippine-based research remains limited in examining how climate change awareness translates into concrete, sustainability-driven marketing practices (Patil et al., 2025; Lunar et al., 2025).

This study addresses that gap by pursuing four key objectives: (a) to assess the level of climate change awareness among Pilgrim Christian College (PCC) marketing students, (b) to evaluate the extent of their sustainable marketing practices, (c) to determine whether significant differences exist in these

practices across demographic profiles, and (d) to examine the relationship between awareness and practice. By integrating theory with practice, the study investigates how climate knowledge and attitudes can be transformed into sustainability-oriented business strategies that contribute to both academic growth and real-world application.

Scholars affirm that awareness is fundamental in shaping sustainable behavior. Green product knowledge predicts purchase intentions (Ansu Mensah, 2021), while environmental awareness increases willingness to pay for eco-friendly products (García-Salirrosas et al., 2024). Academic environments foster pro-environmental consumer behavior (Babu et al., 2024), and peer networks strengthen sustainable consumption patterns (Welbeck & Larbi, 2025). Structured education also plays a vital role, particularly in regions like Southeast Asia where climate vulnerabilities are acute (Aksit, 2025). In the Philippine setting, De Guzman and Torres (2022) observed that students display strong concern for the environment but lack institutionalized platforms for advocacy, while Kagawa (2022) highlighted gaps in embedding sustainability within higher education marketing curricula. These insights underscore the urgent need to strengthen climate-related education and its translation into marketing practice—an area where this study seeks to contribute.

The study's significance lies in both academic and practical dimensions. Academically, it provides empirical evidence that can guide PCC in enhancing its curriculum by embedding sustainability across levels of marketing education. Practically, it informs policymakers, educators, and business leaders in developing strategies that prepare future professionals to integrate sustainability principles into decision-making and marketing operations (Chen et al., 2025).

To guide this research, the study is anchored on an integrated theoretical foundation. The Theory of Planned Behavior (TPB) explains how attitudes, subjective norms, and perceived behavioral control shape sustainable marketing intentions. The Value-Belief-Norm (VBN) Model emphasizes how ecological values, once activated by awareness, lead to pro-environmental commitments. The Environmental Literacy Framework highlights that literacy requires knowledge, attitudes, and applied skills, while Sustainability Education Models (Uzorka et al., 2024) emphasize higher education's responsibility to cultivate climate competencies through experiential and transformative learning. By combining these frameworks, the study develops a multi-dimensional lens to assess how demographic factors, awareness, and values shape sustainable marketing practices among students.

The conceptual framework of the study identifies two clusters of independent variables: demographic profile (sex, age, year level, and internet access) and climate change awareness (knowledge, risk perception, attitudes, and access to information). These are hypothesized to influence the dependent variable, sustainable marketing practices, which is measured through green product advocacy, ethical advertising, consumer influence, and integration of sustainability in projects. The framework assumes that awareness alone is insufficient unless reinforced by structured education, experiential learning, and peer-driven initiatives, which collectively ensure impactful and consistent sustainable behaviors.

MATERIALS & METHODS

This study employed a descriptive-correlational research design, which was appropriate because it served two key purposes: (a) describing the current levels of climate change awareness and sustainable marketing practices among students, and (b) determining the statistical relationships between these two constructs. This dual design ensured both a comprehensive description of existing conditions and the testing of theoretical linkages, fully aligned with the study's objectives.

The research was conducted at Pilgrim Christian College, focusing on Bachelor of Science in Business Administration–Marketing Management students. Using stratified random sampling, 86 respondents

were proportionally selected across year levels. This sampling strategy minimized bias, enhanced representativeness, and strengthened the generalizability of the results to the student population.

The research instrument was a structured questionnaire composed of three parts: (1) demographic profile, (2) Likert-scale items measuring climate change awareness, risk perception, and sustainable marketing practices, and (3) open-ended items for reflections. Content validity was ensured through expert review by specialists in marketing and environmental education, while pilot testing confirmed reliability, yielding Cronbach's alpha values that indicated strong internal consistency across subscales. This guaranteed that the instrument was both valid and dependable for data collection.

For data analysis, both descriptive and inferential statistics were employed. Descriptive statistics (frequencies, percentages, means, and standard deviations) summarized the data, while inferential tests such as independent samples t-tests, one-way ANOVA, and Pearson's correlation coefficient examined differences and relationships. Parametric tests were deliberately chosen because the sample size was sufficient ($n = 86$), the data met the assumptions of normality, and Likert-scale responses were treated as interval-level data. This ensured higher statistical power and more precise estimates compared to non-parametric alternatives, thereby enhancing the credibility of findings.

To triangulate the results and enrich interpretation, a qualitative component was also included. Semi-structured interviews with selected students provided deeper insights into their lived experiences and contextual realities that were not fully captured through the survey. These narratives complemented the quantitative data, confirming patterns, clarifying ambiguities, and adding depth to the discussion of results. By integrating both quantitative and qualitative approaches, the study ensured methodological rigor and produced conclusions that were not only statistically sound but also contextually meaningful.

RESULTS AND DISCUSSION

Demographic Profile of the Respondents

The demographic profile showed that most PCC respondents were young women (64%), aged 18–22, primarily second-year undergraduates (62.8%), who relied on smartphones (93%) and Wi-Fi/mobile data mainly for academic use. This underscores the need for mobile-friendly, gender-sensitive sustainability education, consistent with studies showing women's stronger environmental concern (Welbeck & Larbi, 2025), regional patterns of digital access within Asia, alongside worldwide approaches that promote multi-device integration.

Objective 1: To assess the level of climate change awareness among Pilgrim Christian College (PCC) marketing students

Table 1 presents the level of climate change awareness of PCC marketing students in terms of knowledge. Results indicate that students were generally "Highly Aware" ($M = 3.39$, $SD = 0.63$), with their strongest awareness in understanding the causes and effects of climate change ($M = 3.70$).

The results showed that PCC students were generally "Highly Aware" of climate change ($M = 3.39$, $SD = 0.63$), with their strongest knowledge centered on its causes and effects ($M = 3.70$). However, their understanding of ecosystem-related issues, such as biodiversity loss and food security, was weaker ($M = 3.24$). This indicates that while students recognize human-driven causes of climate change, their ecological literacy remains limited. This finding is consistent with García-Salirrosas et al. (2024), who emphasized that knowledge enhances sustainable consumer decisions, and with Aksit (2025), who noted that structured education strengthens literacy in climate-vulnerable regions. Locally,

Velayo et al., 2024) found that Filipino students often display strong awareness of environmental hazards but have less exposure to biodiversity- and agriculture-focused content.

Table 1
Level of Climate Change Awareness of Students in Terms of Knowledge

Items	Mean	SD	Description	Interpretation
I am aware of the causes and effects of climate change.	3.70	0.46	Strongly Agree	Highly Aware
I can describe the impact of climate change on ecosystems.	3.28	0.66	Strongly Agree	Highly Aware
I understand the relationship between greenhouse gases and global warming.	3.24	0.77	Strongly Agree	Highly Aware
I am knowledgeable about the role of human activities in climate change.	3.41	0.60	Strongly Agree	Highly Aware
I am aware of the role of deforestation in contributing to climate change.	3.31	0.58	Strongly Agree	Highly Aware
I can explain how climate change affects agriculture and food security.	3.38	0.71	Strongly Agree	Highly Aware
Overall Mean	3.39	0.63	Strongly Agree	Highly Aware

Legend: 1.00-1.75 Strongly Disagree (Not Aware), 1.76-2.50 Disagree (Slightly Aware), 2.51-3.25 Agree (Moderately Aware), 3.26-4.00 Strongly Agree (Highly Aware)

When compared with global benchmarks, PCC students' knowledge profile reflects broader Southeast Asian trends, where awareness tends to be wide but not deep. In contrast, Western institutions often report higher ecological literacy due to integrated curricula and systematic environmental education (Guerrero & Sjöström, 2025). This imbalance supports the Environmental Literacy Framework, which highlights that literacy must extend beyond surface-level awareness to actionable understanding, and aligns with the Theory of Planned Behavior (TPB), which suggests that incomplete knowledge may weaken the attitudes and intentions necessary for sustainable practices.

The findings suggest that without deeper ecological literacy, students may struggle to transform general awareness into practical and effective sustainable marketing strategies. At PCC, strengthening curricular modules on biodiversity, agriculture, and climate-resilient food systems—delivered through mobile-friendly and low-data platforms (Chen et al., 2025)—is essential. These targeted interventions can address knowledge gaps and support students in progressing from broad awareness to applied, sustainability-oriented practice, in alignment with Sustainable Development Goal 13 (Climate Action).

Table 2
Level of Climate Change Awareness of Students in Terms of Perception of Environmental Risk

Items	Mean	SD	Description	Interpretation
I believe that climate change poses a serious threat to our environment.	3.53	0.63	Strongly Agree	Highly Aware
I think that climate change will negatively affect future generations.	3.55	0.66	Strongly Agree	Highly Aware
I perceive climate change as a significant risk to global health.	3.65	0.59	Strongly Agree	Highly Aware
I believe that rising sea levels due to climate change are a real concern.	3.58	0.50	Strongly Agree	Highly Aware
I think that extreme weather events are becoming more frequent because of climate change.	3.60	0.54	Strongly Agree	Highly Aware
I believe that climate change will cause significant economic disruption in the future	3.57	0.64	Strongly Agree	Highly Aware
Overall Mean	3.58	0.59	Strongly Agree	Highly Aware

Legend: 1.00-1.75 Strongly Disagree (Not Aware), 1.76-2.50 Disagree (Slightly Aware), 2.51-3.25 Agree (Moderately Aware), 3.26-4.00 Strongly Agree (Highly Aware)

Table 2 presents the level of students' perception of environmental risk related to climate change. Students were "Highly Aware" of environmental risks ($M = 3.58$, $SD = 0.59$), with strongest concerns for global health ($M = 3.65$), extreme weather ($M = 3.60$), and future generations ($M = 3.55$). The lowest concern, though still high, was sea-level rise ($M = 3.53$). This pattern reflects Ofori et al. (2023), who noted that youth in developing countries prioritize immediate risks over slower processes, and aligns with Aksit (2025), who stressed that risk perception enhances policy support. Locally, Aruta & Guinto (2022) also observed that Filipino students focus more on flooding and typhoons than on long-term climate threats.

Across nations, the human-centered framing of PCC students mirrors findings in other Asian contexts but contrasts with coastal European studies, where sea-level rise is considered the most pressing concern (Kikko & Ishigaki, 2025). Theoretically, this aligns with the Value-Belief-Norm (VBN) model, which posits that perceived risks activate ecological values and motivate pro-environmental behavior. Strengthening risk education by integrating both immediate hazards and slower, long-term threats can enhance students' understanding, particularly at PCC. Incorporating simulations and case studies that connect typhoon recovery with sea-level rise will better prepare students to design sustainability strategies that address both urgent and gradual climate risks

Table 3

Level of Climate Change Awareness of Students in Terms of Attitudes Toward Climate Action

Items	Mean	SD	Description	Interpretation
I am willing to take personal actions to reduce my carbon footprint.	3.42	0.60	Strongly Agree	Highly Aware
I believe that individuals can contribute to combating climate change through lifestyle changes.	3.52	0.59	Strongly Agree	Highly Aware
I support policies aimed at reducing carbon emissions.	3.60	0.58	Strongly Agree	Highly Aware
I am willing to pay more for eco-friendly products.	3.45	0.63	Strongly Agree	Highly Aware
I think that businesses should prioritize sustainability in their operations.	3.53	0.61	Strongly Agree	Highly Aware
I am likely to advocate for climate-friendly policies in my community.	3.63	0.55	Strongly Agree	Highly Aware
Overall Mean	3.53	0.59	Strongly Agree	Overall Mean

Legend: 1.00-1.75 Strongly Disagree (Not Aware), 1.76-2.50 Disagree (Slightly Aware), 2.51-3.25 Agree (Moderately Aware), 3.26-4.00 Strongly Agree (Highly Aware)

Worldwide, students in advanced economies demonstrate a higher willingness to pay, supported by stronger purchasing power (Guerrero & Sjöström, 2025). This highlights the Theory of Planned Behavior (TPB): although attitudes are positive, perceived behavioral control (i.e., economic constraints) weakens intentions. Simulations and cost-benefit analyses can help students recognize sustainability as both an ethical and financially feasible choice, with PCC serving as a key platform for bridging the gap between intention and practice.

Table 4 presents students' access to environmental information. Students showed only "Moderate Awareness" ($M = 3.18$, $SD = 0.66$), with the strongest trust in news outlets ($M = 3.29$) and the weakest in regular engagement with structured resources ($M = 2.99$). This reliance on general media reflects Hossain et al. (2025), who stressed the need for reliable access, and Burgos-Espinoza et al. (2024), who warned that inconsistent sources create fragmented understanding. Locally, Ermita et al. (2025) found Filipino students rely heavily on social media rather than formal materials.

Table 4
Level of Climate Change Awareness of Students in Terms of Access to Environmental Information

Items	Mean	Std. Deviation	Description	Interpretation
I have easy access to information about climate change.	3.21	0.70	Agree	Moderately Aware
I regularly read articles or watch videos about climate change	3.03	0.74	Agree	Moderately Aware
I have access to educational resources that discuss the effects of climate change	2.99	0.73	Agree	Moderately Aware
I trust the information I receive about climate change from news outlets	3.29	0.61	Strongly agree	Highly Aware
I actively seek out information on climate change to stay informed	3.28	0.52	Strongly agree	Highly Aware
I am aware of local organizations and programs that provide information on climate change.	3.27	0.66	Strongly agree	Highly Aware
Overall Mean	3.18	0.66	Agree	Moderately Aware

Legend: 1.00-1.75 Strongly Disagree (Not Aware), 1.76-2.50 Disagree (Slightly Aware), 2.51-3.25 Agree (Moderately Aware), 3.26-4.00 Strongly Agree (Highly Aware)

On the international stage, students in industrialized nations display greater willingness to pay for eco-friendly products, largely due to stronger purchasing power (Guerrero & Sjöström, 2025). This reflects the Theory of Planned Behavior (TPB), which explains that although attitudes may be positive, limited perceived behavioral control—such as financial constraints—can weaken intentions. Within PCC, integrating simulations and cost–benefit analyses into the curriculum can help students view sustainability not only as an ethical responsibility but also as a financially viable option, thereby bridging the gap between intention and practice.

Objective 2: To Evaluate the Extent of Sustainable Marketing Practices

Table 5 presents the level of PCC marketing students' commitment to green product advocacy. Results show that students were "Highly Sustainable" overall ($M = 3.38$, $SD = 0.65$), but lowest in encouraging peers ($M = 3.27$), revealing weak advocacy skills. This aligns with García-Salirrosas et al. (2024), who stressed eco- labels and affordability in personal decisions, and with Welbeck & Larbi (2025), who showed peer influence enhances sustainable behavior. Zhang et al. (2024) also confirmed that deeper environmental knowledge increases peer advocacy.

Table 5
Extent of Students' Sustainable Marketing Practices in Terms of Green Product Advocacy

Items	Mean	SD	Description	Interpretation
I actively promote products that are environmentally friendly.	3.34	0.64	Strongly Agree	Highly Sustainable
I encourage others to choose green products over conventional products.	3.27	0.68	Strongly Agree	Highly Sustainable
I believe that eco-friendly products are essential for protecting the environment.	3.50	0.59	Strongly Agree	Highly Sustainable
I often consider the environmental impact of a product before purchasing it.	3.33	0.68	Strongly Agree	Highly Sustainable
I recommend green products to my friends and family.	3.37	0.65	Strongly Agree	Highly Sustainable
I prefer purchasing products with eco-labels or certifications.	3.48	0.66	Strongly Agree	Highly Sustainable
Overall Mean	3.38	0.65	Strongly Agree	Highly Sustainable

Legend: 1.00-1.75 Strongly Disagree (Not Aware), 1.76-2.50 Disagree (Slightly Aware), 2.51-3.25 Agree (Moderately Aware), 3.26-4.00 Strongly Agree (Highly Aware)

Universally, students in Western contexts are more engaged in peer-led campaigns, reflecting stronger experiential learning opportunities (Olsson et al., 2022). This disparity underscores the Theory of Planned Behavior (TPB), as positive attitudes may be present but supportive social norms—particularly peer influence—remain underdeveloped. To address this within PCC, initiatives such as peer-led product fairs, green campaigns, and service-learning activities are essential to empower students to become sustainability influencers.

Table 6 revealed that students rated ethical advertising as “Highly Sustainable” ($M = 3.46$, $SD = 0.56$), with transparency receiving the highest rating ($M = 3.58$) and skepticism toward unverified claims the lowest ($M = 3.31$). These findings are consistent with Isac et al. (2024), who emphasized that environmental knowledge fosters brand trust, and with El Shihy and Awaad (2025), who observed that members of Generation Z often face difficulties in identifying greenwashing. Similarly, Neureiter et al. (2024) cautioned that limited skepticism toward environmental claims may weaken consumer loyalty.

Table 6

Extent of Students’ Sustainable Marketing Practices in Terms of Ethical Advertising Awareness

Items	Mean	SD	Description	Interpretation
Aware of sustainability advertising strategies	3.52	0.50	Strongly agree	Highly sustainable
Differentiate ethical vs. misleading green ads	3.34	0.57	Strongly agree	Highly sustainable
Brands should advertise environmental initiatives honestly	3.58	0.58	Strongly agree	Highly sustainable
Skeptical of unverified claims	3.31	0.58	Strongly agree	Highly sustainable
Support companies with ethical advertising	3.40	0.66	Strongly agree	Highly sustainable
Transparency enhances credibility	3.58	0.50	Strongly agree	Highly sustainable
Overall Mean	3.46	0.56	Strongly Agree	Highly Sustainable

Note. Scale: 1.00–1.49 = Strongly Disagree (Not Sustainable); 1.50–2.49 = Disagree (Less Sustainable); 2.50–3.49 = Agree (Moderately Sustainable); 3.50–4.00 = Strongly Agree (Highly Sustainable)

Compared with Western peers, PCC students’ moderate skepticism reflects less structured media literacy training (Guerrero & Sjöström, 2025). Theoretically, this gap highlights the need for critical evaluation skills under the Environmental Literacy Framework. Adding advertising critiques, media literacy, and ethical simulations is key to preparing students as ethical marketing professionals, particularly within the context of PCC.

Table 7

Extent of Students’ Sustainable Marketing Practices in Terms of Integration of Sustainability in Projects

Items	Mean	SD	Description	Interpretation
Sustainability should be core of projects	3.41	0.62	Strongly Agree	Highly Sustainable
Support sustainability in planning/development	3.53	0.55	Strongly Agree	Highly Sustainable
Sustainability increases long-term success	3.52	0.55	Strongly Agree	Highly Sustainable
Involved in sustainability projects	3.09	0.82	Agree	Moderately Sustainable
Students should include sustainability	3.49	0.63	Strongly Agree	Highly Sustainable
Consider environmental factors in decisions	3.42	0.60	Strongly Agree	Highly Sustainable
Overall Mean	3.41	0.63	Strongly Agree	Highly Sustainable

Note. Scale: 1.00–1.49 = Strongly Disagree (Not Sustainable); 1.50–2.49 = Disagree (Less Sustainable); 2.50–3.49 = Agree (Moderately Sustainable); 3.50–4.00 = Strongly Agree (Highly Sustainable)

Table 7 presents students’ recognition of sustainability in academic and professional projects. Results

indicate that students were rated as “Highly Sustainable” ($M = 3.41$, $SD = 0.63$), although direct project involvement received the lowest score ($M = 3.09$). These findings align with Ansu Mensah (2021), who demonstrated that sustainability supports long-term success, but contrast with Uzorka et al. (2024), who emphasized that hands-on initiatives are more effective in driving engagement. Similarly, López-Santiago et al. (2024) highlighted that service-learning strengthens values, while Rodríguez-Zurita et al. (2025) confirmed that community projects foster deeper commitment.

Active project participation is stronger in developed nations, where sustainability is embedded in capstone requirements (Olsson et al., 2022) globally. Embedding capstone projects, NGO collaborations, and service-learning is therefore essential for bridging theory and practice, and in PCC this strategy aligns with the VBN model, which illustrates how values are transformed into behavior through engagement.

Objective 3: To determine whether significant differences exist in these practices across demographic profiles.

Table 8 presents the differences in sustainable marketing practices of PCC students when grouped by sex. Female students ($M = 3.49$) reported practicing sustainability more consistently than male students ($M = 3.42$), with the difference found to be significant ($F = 3.637$, $p = .050$). These findings align with Welbeck and Larbi (2025) and Ofori et al. (2023), who observed that women tend to exhibit stronger environmental concern. Locally, Mehraj et al. (2023) further confirmed that women in emerging markets often adopt sustainable behaviors more actively.

Table 8
Test of Significant Difference in Sustainable Marketing Practices of PCC Students When Grouped by Sex

Profile		Sustainable Marketing Practices				
Sex	Category	Mean	f-value	p-value	Remarks	Decision on Ho
	Male	3.42	3.637	.050	Significant	Rejected
	Female	3.49				

Significant if p-value < 0.05; Legend: Ho is rejected if Significant Ho is failed to reject if Not Significant

Across global contexts, this pattern is consistent, with women often at the forefront of eco-friendly practices. From a theoretical standpoint, the Value-Belief- Norm (VBN) model accounts for this through the presence of stronger internalized norms. Designing targeted interventions for male students such as gamified activities and simulations can help close the gap and promote greater inclusivity in sustainable engagement, particularly within PCC.

Table 9
Test of Significant Difference in Sustainable Marketing Practices of PCC Students When Grouped by Age

Profile		Sustainable Marketing Practices				
Age	Category	Mean	f-value	p-value	Remarks	Decision on Ho
	18 to 22	3.47	1.534	.434	Not Significant	Failed to Rejected
	23 to 27	4.00				
	28 to 32	4.00				
	33 to 37	4.00				
	38 and above	4.00				

Significant if p-value < 0.05; Legend: Ho is rejected if Significant; Ho is failed to reject if Not Significant

Table 9 presents the differences in sustainable marketing practices of PCC students when grouped by age. No significant differences were observed across age groups ($F = 1.534$, $p = .434$), although older

students reported slightly higher scores ($M = 4.00$). These findings contrast with Saari et al. (2021), who reported stronger concern among older learners in Europe, but align with Ofori et al. (2023) and Aksit (2025), who noted more uniform attitudes in Asia due to shared environmental risks.

The Theory of Planned Behavior (TPB) helps explain this consistency, as collective norms within PCC may override age-related variations. The implication is that age-specific instructional modules may not be necessary; however, cross- generational projects could enrich student learning by encouraging diverse perspectives and shared responsibility.

Table 10 presents the differences in sustainable marketing practices of PCC students when grouped by year level. No significant differences were observed across groups ($F = 1.902$, $p = .136$), although third-year students reported noticeably lower scores ($M = 3.14$) compared to other levels. This dip suggests weaker reinforcement of sustainability concepts in the third year.

Table 10
Test of Significant Difference in Sustainable Marketing Practices of PCC Students When Grouped by Year Level

Profile		Sustainable Marketing Practices				
	Category	Mean	f-value	p-value	Remarks	Decision on Ho
Year Level	First Year	3.53	1.902	.136	Not Significant	Failed to Rejected
	Second Year	3.61				
	Third Year	3.14				
	Fourth Year	3.50				

Significant if p-value < 0.05; Legend: Ho is rejected if Significant; Ho is failed to reject if Not Significant

The Environmental Literacy Framework emphasizes the importance of progressive scaffolding, indicating that PCC must embed sustainability consistently across all four years of the program rather than concentrating it in selected courses. A more evenly distributed integration of sustainability principles could strengthen learning continuity and ensure students maintain engagement throughout their academic journey.

Table 11 presents the differences in sustainable marketing practices of PCC students when grouped by type of internet access. No significant differences were observed across groups ($F = 1.985$, $p = .163$), although students relying on public Wi-Fi reported the highest mean score ($M = 4.00$). These findings support Smith and Murphy (2022), who argued that varied access does not necessarily limit sustainable behaviors, but contrast with Burgos-Espinoza et al. (2024), who linked structured access to stronger engagement. Similarly, Hossain et al. (2025) emphasized that reliable internet connectivity remains critical for building sustainability literacy.

From a theoretical perspective, the Theory of Planned Behavior (TPB) suggests that internet access influences students' perceived behavioral control. For PCC, this implies the importance of developing offline, mobile-friendly lessons to ensure equitable learning opportunities and to help bridge existing digital divides.

Table 11
Test of Significant Difference in Sustainable Marketing Practices of PCC Students When Grouped by Internet Access

Profile		Sustainable Marketing Practices				
	Category	Mean	f-value	p-value	Remarks	Decision on Ho
Internet Access	Mobile Data	3.46	1.985	.163	Not Significant	Failed to Rejected
	Home Wi-Fi	3.61				
	Public Wi-Fi	4.00				

Significant if p-value < 0.05; Legend: Ho is rejected if Significant

Developing offline, mobile-friendly lessons is essential to ensure equitable learning opportunities and help bridge existing digital divides, particularly for PCC.

Table 12 presents the differences in sustainable marketing practices among students when grouped by their primary device used for internet access. No significant differences were observed ($F = 2.837$, $p = .064$), although laptop/desktop and tablet users reported higher mean scores ($M = 4.00$) compared to smartphone users ($M = 3.53$). These findings support Burgos-Espinoza et al. (2024), who noted that structured tools enhance deeper learning, but contrast with Smith and Murphy (2022), who found minimal differences in behavior across devices. This indicates that while devices may not directly dictate sustainable behavior, the functionality and efficiency of certain tools can provide an advantage in applying sustainability practices. Consequently, access to more structured digital platforms may still indirectly shape learning outcomes and behavioral consistency.

Worldwide, laptops remain the primary tools for sustainability coursework (Guerrero & Sjöström, 2025), whereas PCC students predominantly rely on smartphones. While mobile-friendly, low-data lessons should continue to be offered at PCC, expanding digital laboratories and improving access to laptops are equally vital to promote equity in sustainability learning. This dual strategy ensures that no student is excluded due to limited resources while still raising the overall technological standard of instruction. By balancing inclusivity with infrastructure development, PCC can create a more resilient and future-ready learning environment.

Table 12
Test of Significant Difference in Sustainable Marketing Practices of PCC Students When Grouped by Primary Device Used

Profile		Sustainable Marketing Practices				
Device used to Access the Internet	Category	Mean	f-value	p-value	Remarks	Decision on Ho
	Smartphone	3.53	2.837	.064	Not Significant	Failed to Reject
	Laptop/Desktop	4.00				
	Tablet	4.00				
	Computer	3.00				

Significant if p-value < 0.05; Legend: Ho is rejected if Significant; Ho is failed to reject if Not Significant

Table 13 shows that significant differences emerged in sustainable marketing practices when students were grouped by their primary purpose of internet use ($F = 2.794$, $p = .045$). Students who primarily used the internet for academic or research purposes reported the highest mean score ($M = 3.70$). These findings support Burgos-Espinoza et al. (2024), who emphasized that academic-driven use fosters sustainable behavior, and Hossain et al. (2025), who highlighted the importance of structured information access. This suggests that students who utilize digital tools for knowledge creation and critical inquiry are more likely to internalize sustainable values. In turn, the academic orientation of internet use becomes a key driver of long-term behavioral change.

Table 13
Test of Significant Difference in Sustainable Marketing Practices of PCC Students When Grouped by Primary Purpose of Internet Use

Profile		Sustainable Marketing Practices				
Purpose of Internet Use	Category	Mean	f-value	p-value	Remarks	Decision on Ho
	Academic Research	3.70	2.794	.045	Significant	Rejected
	Entertainment	3.38				
	Work-related Tasks	3.43				
	Social	3.39				
	Media/Communication					

Significant if p-value < 0.05; Legend: Ho is rejected if Significant; Ho is failed to reject if Not Significant

However, PCC students differ from the results of El Shihy and Awaad (2025), who found social media to be highly effective for Gen Z engagement, suggesting that its potential for sustainability promotion may be underutilized in this context. For PCC, the implication is to encourage research-driven internet use while also integrating peer-led social media campaigns to maximize engagement and inclusivity. This blended approach can cultivate both evidence-based learning and peer influence, reinforcing sustainability from multiple directions. Ultimately, aligning academic rigor with digital community-building may produce stronger and more inclusive outcomes for PCC students.

Objective 4: To Examine the Relationship Between Climate Change Awareness and Sustainable Marketing Practices

Table 14
Test of Significant Relationship between Climate Change Awareness and Sustainable Marketing Practices Among Students

Climate Change Awareness	Sustainable Marketing Practices											
	Green Product Advocacy			Ethical Advertising Awareness			Sustainable Consumer Influence			Integration of Sustainability in Projects		
	r	p- value	Ho	r	p- value	Ho	r	p- value	Ho	r	p- value	Ho
Knowledge of Climate Change	.286**	.005	S	.095	.385	NS	.304**	.004	S	.398**	.000	S
Perception of Environmental Risk	.294**	.006	S	.293**	.006	S	.322**	.002	S	.453**	.000	S
Attitude Toward Climate Action	.260*	.016	S	.098	.368	NS	.574**	.000	S	.273*	.011	S
Access to Environmental Information	.449**	.000	S	.219*	.043	S	.250*	.020	S	.483**	.000	S

Significant if p-value <0.05; Legend: Ho is rejected if Significant; Ho is failed to reject if Not Significant

Table 14 presents the correlation analysis between climate change awareness and sustainable marketing practices among PCC marketing students. Attitudes toward climate action were most strongly linked to consumer influence ($r = .574$, $p = .000$), while access to information showed the highest correlation with project integration ($r = .483$, $p = .000$). Knowledge alone was not significantly related to ethical advertising, highlighting weak detection of greenwashing. This supports Aksit (2025) and Chen et al. (2025) on the role of structured education, and aligns with Isac et al. (2024) and Neureiter et al. (2024) on the persistent challenges posed by greenwashing.

Theoretically, this confirms the TPB (attitudes drive intention) and the Environmental Literacy Framework (knowledge must connect with skills). For PCC, embedding student-led campaigns, NGO partnerships, and capstone projects can transform awareness into applied literacy and advocacy. Theoretically, this confirms the Theory of Planned Behavior (TPB), which emphasizes that attitudes drive behavioral intention, and the Environmental Literacy Framework, which underscores that knowledge must connect with applied skills. For PCC, embedding student-led campaigns, NGO partnerships, and capstone projects can transform awareness into applied literacy and advocacy. Such strategies would not only enhance individual competencies but also create collective platforms for sustainable influence within the community. Ultimately, integrating awareness with practice ensures that sustainability becomes both an academic outcome and a lived student experience.

CONCLUSION

This study examined the relationship between climate change awareness and sustainable marketing practices among marketing students of Pilgrim Christian College (PCC). The findings emphasize several key conclusions aligned with the research objectives.

First, students showed strong awareness of climate change causes and effects, particularly human activities and global warming. However, their weaker understanding of ecosystem-related risks like biodiversity loss and food security highlights the need for reinforced ecological literacy.

Second, students engaged commendably in sustainable marketing practices such as green product advocacy, ethical advertising, and project integration. Yet, gaps were evident in peer influence, critical evaluation of misleading claims, and active participation in sustainability initiatives, showing that awareness leads to personal but not consistent collective practice.

Third, demographic analysis revealed that female students exhibited stronger sustainable practices than males. Other demographics (age, year level, internet access, and device type) showed no significant differences, except for internet use, where academic and research-driven users practiced sustainability more than those using it mainly for entertainment or social media.

Fourth, correlation analysis confirmed that climate change awareness predicts sustainable marketing practices. Attitudes toward climate action were most strongly linked to consumer influence, while access to environmental information was closely tied to project integration, but knowledge alone did not predict ethical advertising awareness—showing the need for training against greenwashing.

Overall, the most important conclusion is that awareness is necessary but insufficient. Without experiential learning, credible information access, and structured curriculum integration, students cannot fully translate awareness into consistent and impactful sustainability practices.

Recommendations

For Marketing Students. Students should engage in sustainability-focused capstone projects, peer-led advocacy campaigns, and internships with NGOs and LGUs. Such activities bridge theoretical knowledge with real-world sustainability applications while building leadership and advocacy skills.

For Faculty and Curriculum Designers. Faculty should integrate sustainability across all year levels through case studies, media literacy critiques, biodiversity-focused lessons, and service-learning. Activities such as sustainability audits, eco-product fairs, and community-based marketing projects will ensure applied practice.

For School Administrators and Policymakers. PCC should institutionalize a Sustainability Integration in Marketing Education (SIME) framework aligned with SDG 4 (Quality Education) and SDG 13 (Climate Action). This involves embedding sustainability in program outcomes, creating mobile-first learning resources, investing in faculty training, and building partnerships with industries and NGOs. Policy reforms that mainstream sustainability across academic and operational processes are also necessary.

For Environmental Advocacy Groups and NGOs. Partnerships with PCC should be strengthened through mentorships, volunteer opportunities, and joint campaigns. These collaborations will turn classroom knowledge into real-world impact while fostering students' applied competencies in sustainable marketing.

For Future Researchers. Further studies should explore the role of social media and digital platforms in promoting sustainability practices, as well as comparative studies across institutions and regions to capture cultural and contextual influences on climate awareness and marketing behavior.

Strategic Framework Proposal: SIME (Sustainability Integration in Marketing Education)

To implement these recommendations, the SIME framework is proposed with five pillars:

1. **Curriculum Integration** – embedding sustainability across all marketing courses with continuity across year levels.
2. **Experiential Learning** – requiring applied projects, service-learning, and NGO/community partnerships.
3. **Digital Engagement** – designing mobile-friendly, low-data, and social media-driven sustainability modules.
4. **Institutional Support** – embedding sustainability in PCC policies, accreditation, and operations.
5. **External Collaboration** – building strong partnerships with NGOs, LGUs, and industries for mentorship and advocacy.

Through SIME, climate awareness is transformed into concrete sustainable action, ensuring that PCC graduates emerge as marketing professionals and sustainability-driven leaders prepared to advance ecological responsibility in business and society.

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