

Original Research Article

A Study on Assessing Awareness and Knowledge of Sustainability Concepts among Undergraduate Students

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Abstract

This study examines undergraduate students' awareness and knowledge of sustainability concepts, specifically focusing on economic and social sustainability dimensions and their influence on career choices. A literature review highlights the evolving definitions of sustainability, the importance of education in fostering awareness, and the existing knowledge gap among younger populations. The research aims to assess students' understanding of sustainability principles and identify factors shaping their awareness, testing the hypothesis that greater educational exposure leads to increased awareness and understanding. Using a cross-sectional design, the study surveyed 205 undergraduate students from various disciplines through convenience sampling. Quantitative data were collected via structured questionnaires and analyzed using descriptive statistics and regression analysis. The findings reveal a significant correlation between educational exposure and sustainability awareness, suggesting that enhancing curricula can improve students' knowledge and career perceptions. This underscores the necessity of integrating sustainability concepts into higher education to promote informed decision-making among future professionals.

Keywords: Sustainability awareness, undergraduate students, education, economic sustainability, social sustainability.

Introduction

Sustainability has become an essential concept in addressing global challenges such as environmental degradation, social inequality, and economic instability. As future leaders and decision-makers, undergraduate students play a critical role in advancing sustainable practices across various fields. Sustainability is increasingly recognized as a critical concept as societies grapple with the finite nature of resources and the consequences of

overconsumption and pollution (Church et al., 2022; Lanzano, 2021). Defined as meeting current needs without compromising the ability of future generations to meet theirs, sustainability involves maintaining ecological processes, biodiversity, and productivity (Church et al., 2022; Terry, 2010). It encompasses environmental, economic, and social dimensions, focusing on responsible resource use, conservation, and reuse (Malhotra, 2013). Organizations are now integrating sustainability practices to achieve social, environmental, and economic goals concurrently, rather than viewing them as trade-offs (Malhotra, 2013). Given the current global economic, social, and environmental challenges, addressing sustainability requires an interdisciplinary approach (Church et al., 2022; Lanzano, 2021). Understanding sustainability thus involves both the scientific basis for sustainable resource use and the broader social and economic implications of sustainable practices.

In recent decades, the importance of sustainability has grown, with an emphasis on ensuring that current actions do not compromise future generations' ability to meet their needs (Nandhana K P & Dr. Swaricha Johri, 2024). The concept has evolved from corporate social responsibility to encompass broader issues of corporate sustainability, addressing economic, environmental, social, and managerial dimensions (Zeynep Sahin & Çankaya, 2019). This evolution has led to the increased importance of sustainability reporting, where businesses are expected to disclose the social, economic, and environmental impacts of their activities (Zeynep Sahin & Çankaya, 2019). Sustainability is crucial for national growth and development, contributing to economic and social progress while ensuring environmental preservation (A. Talan et al., 2020). However, achieving sustainability remains challenging, particularly due to developmental gaps that require innovative solutions (A. Talan et al., 2020).

Studies show that students generally possess more knowledge about local sustainability issues than global ones, with better understanding of organizational governance compared to environmental topics (Cezarino et al., 2018). Factors influencing students' sustainability actions include gender, prior knowledge, and participation in specific sustainability courses (Sammalisto et al., 2016). Structured sustainability curricula significantly improve students' sustainability knowledge, with a minimum of three related courses making a notable impact (Briens et al., 2022). The source of environmental information also plays a crucial role; classroom learning at both secondary and postsecondary levels has the strongest positive influence, while parental influence shows a negative correlation (Michel & Zwickle, 2021). These findings underscore the importance of integrating sustainability education into higher education curricula to enhance students' understanding and actions related to sustainability.

Research Problem

Despite the growing global focus on sustainability across various sectors, there is a significant gap in understanding how well undergraduate students grasp key sustainability concepts, particularly in the environmental, economic, and social dimensions. While existing literature emphasizes the importance of sustainability education, empirical research specifically examining undergraduate students' awareness and attitudes is limited. Additionally, while general attitudes toward sustainability have been explored, comprehensive studies on how students perceive its significance in their personal lives and future careers are scarce. This research aims to assess current awareness and attitudes among undergraduate students regarding sustainability concepts, contributing to the development of more effective sustainability education programs that better equip students to integrate these principles into their lives and future careers.

Objectives of the Study

1. To evaluate the current level of awareness among undergraduate students regarding key sustainability concepts, encompassing environmental, economic, and social dimensions.
2. To explore how students' awareness and practices in sustainability influence their career outlooks.

Hypothesis

H0: There is no significant relationship between the Environmental Awareness and Impact, Sustainable Economic Practices, Social Sustainability and Community Engagement, and Personal Commitment to Sustainability and the Career Perspectives on Sustainability.

Significance of the Study

This study enhances the literature on sustainability education by evaluating undergraduate students' awareness and understanding of sustainability concepts, revealing significant gaps in knowledge, particularly in the economic and social dimensions. The findings highlight the essential role of higher education institutions in preparing future leaders to address global sustainability challenges. By advocating for the integration of comprehensive sustainability education into curricula, the research supports the idea that universities can foster a culture of sustainability among students. Additionally, insights into students' perceptions of sustainability in their careers can help align educational outcomes with market needs (Christensen et al., 2021). Ultimately, this research calls for universities to strengthen their sustainability efforts, contributing to societal advancement toward a more sustainable future.

Literature Review

Recent studies have explored sustainability awareness among undergraduate students, with mixed results. While some students are familiar with sustainability through educational sources, many lack comprehensive knowledge of key concepts (Alsaati et al., 2020). For instance, a Malaysian study found that 40.7% of students had insufficient knowledge of sustainable development, with final-year students demonstrating higher awareness levels (Lendai et al., 2019). Similarly, research in Indonesia showed high sustainability awareness among students but less effective practice (Ridwan et al., 2021). Despite significant investments by universities in sustainability initiatives, students often have a limited understanding of the concept, primarily focusing on environmental aspects while neglecting social and economic factors (Perrault & Clark, 2017). Additionally, many students are unaware of on-campus sustainability offices and programs (Perrault & Clark, 2017). These findings highlight the need for improved sustainability education in universities, incorporating interdisciplinary approaches and practical applications to enhance students' understanding and engagement with sustainability concepts.

Awareness and understanding of sustainability concepts among students and professionals across various fields are generally low to moderate. For example, pre-service teachers demonstrated limited knowledge of sustainable development concepts compared to traditional environmental concepts (Karpudewan et al., 2013). Similarly, student teachers in New Zealand exhibited simplistic understandings of sustainability, primarily focused on environmental aspects (Birdsall, 2014). In the construction industry, while many students had heard of sustainable construction, few understood the concepts in depth (Zaki et al., 2016). Stakeholders in the Nigerian building industry exhibited moderate levels of knowledge and awareness regarding sustainability (Usman et al., 2021). These findings underscore the need for improved education on sustainability concepts across disciplines. Recommendations include curriculum redesign, regular sensitization programs, and government policies to promote sustainable practices (Zaki et al., 2016; Usman et al., 2021). Enhanced understanding of sustainability is crucial for future professionals to make informed decisions and promote sustainable development in their respective fields.

Sustainability, encompassing environmental, economic, and social dimensions, focuses on responsible resource management and conservation (Malhotra, 2013; Rosen, 2018). It aims to optimize these aspects simultaneously rather than viewing them as trade-offs (Malhotra, 2013). The concept has gained prominence due to growing concerns about ecosystem balance and societal well-being (Malhotra, 2013; Khalili, 2011). Sustainability assessment tools, including quantitative and qualitative indicators, are crucial for evaluating processes and systems (Rosen, 2018). The theory of climate change and its impact on natural resources is closely linked to sustainability discussions (Khalili, 2011). Environmental sustainability, in particular, requires an integrated approach to long-

term ecological preservation (Khalili, 2011). The challenge of achieving environmental sustainability is significant, as it involves ensuring adequate food and housing for a growing global population without damaging the environment on which we depend (Goodland, 1995). Although the paths to achieve this goal may differ across countries and sectors, the underlying objective remains the same (Goodland, 1995).

A study at Universiti Sains Malaysia found moderate to high levels of positive attitudes and perceptions regarding campus sustainability (Sharifah Nurlaili Farhana Syed Azhar et al., 2022). Similarly, Turkish university students demonstrated environmental consciousness, with child development students showing higher awareness than social work students (Şahin & Erkal, 2017). In Malaysia, a sustainable development course positively impacted engineering students' beliefs, attitudes, and intentions towards sustainability (Tang, 2018). Agricultural students also exhibited positive attitudes towards sustainable agriculture, particularly in cognitive aspects (Liaghati et al., 2007). These studies highlight the importance of sustainability education in shaping students' attitudes and suggest that universities play a crucial role in promoting environmental awareness. However, rapid changes in environmental knowledge present challenges, necessitating regular curriculum updates to maintain relevance (Şahin & Erkal, 2017).

Students tend to be more familiar with environmental sustainability concepts compared to economic or social aspects (Burkhart et al., 2020). The importance of sustainability is recognized both in general and for professional practice (Burkhart et al., 2020). Factors influencing students' environmental awareness include their field of study, personal experiences, and prior knowledge (Tobias, 1998). Psychology and health science students, for instance, demonstrate higher awareness of environmental sustainability than those in other disciplines (Burkhart et al., 2020). However, there are also misconceptions, such as conflating sustainability with environmental science, indicating a need for more comprehensive education (Burkhart et al., 2020). These findings suggest that sustainability education should address all three pillars of sustainability and cater to students' diverse backgrounds to foster a well-rounded understanding. Integrating sustainability into various courses and offering interdisciplinary opportunities can help bridge gaps in knowledge and prepare students for future challenges (Tobias, 1998).

The research gap identified in this study pertains to the limited empirical understanding of undergraduate students' awareness and attitudes toward sustainability across its environmental, economic, and social dimensions. While prior studies have examined general knowledge and attitudes toward sustainability, there is a lack of comprehensive research that integrates these aspects, particularly regarding how students perceive the relevance of sustainability in their personal and professional lives. This study aims to address this gap by providing a detailed analysis of students' current understanding and attitudes, which is essential for developing more effective sustainability education programs.

Research Methodology

This study employed a quantitative research design to assess undergraduate students' awareness and attitudes towards sustainability. A total of 205 students from various academic disciplines were surveyed using convenience sampling for quick and practical data collection, though it may limit generalizability.

Sample Selection

The sample consisted of 205 students selected for their availability and willingness to participate. While convenience sampling introduced potential bias, it was appropriate for this exploratory study given time and resource constraints.

Data Collection

Data were collected through a structured questionnaire comprising closed-ended and Likert-scale questions, measuring students' awareness and attitudes across environmental, economic, and social dimensions. The survey was conducted both online and in person to maximize responses.

Data Analysis

Data were analyzed using descriptive statistics (mean, median, standard deviation) and regression analysis to test hypotheses and identify differences in sustainability awareness across disciplines. Reliability analysis using Cronbach's alpha confirmed internal consistency, with all dimensions exceeding the 0.70 threshold.

Result & Discussion

Table 1: Demographic variables

Frequencies		
Gender	Counts	% of Total
Female	139	67.8 %
Male	66	32.2 %
Age	Counts	% of Total
17-18	36	17.6 %
19-20	136	66.3 %
21-22	27	13.2 %
23-24	5	2.4 %
Above 25	1	0.5 %
Are you Familiar with the term Sustainability	Counts	% of Total
Maybe	51	24.9 %
No	20	9.8 %
Yes	134	65.4 %

The demographic data reveals insights into the gender distribution, age range, and familiarity with the term "sustainability" among a sample of 205 participants. In terms of gender, a significant majority of the participants identified as female, comprising **67.8%** (139 individuals), while males accounted for **32.2%** (66 individuals). This indicates a notable gender imbalance in the sample, with females being more represented.

Regarding age, the majority of participants fell within the **19-20** age range, representing **66.3%** (136 individuals). The **17-18** age group followed with **17.6%** (36 individuals), while the **21-22** age group comprised **13.2%** (27 individuals). Only a small fraction of participants were older, with **2.4%** (5 individuals) in the **23-24** age range and just **0.5%** (1 individual) above the age of 25. This age distribution suggests that the sample is predominantly composed of younger individuals, likely reflecting a focus on students or early-career professionals.

When asked about their familiarity with the term "sustainability," a substantial **65.4%** (134 individuals) reported that they were familiar with the concept, indicating a strong awareness among the participants. Conversely, **24.9%** (51 individuals) responded with "maybe," suggesting uncertainty or partial knowledge, while **9.8%** (20 individuals) indicated that they were not familiar with the term at all. This data highlights a generally positive awareness of sustainability within the sample, although there remains a notable portion of participants who are either unsure or unfamiliar with the concept.

Table 2: Descriptive

	N	Mean	SD
Environmental Dimension [I am familiar with the concept of climate change and its impact on the environment]	205	3.39	1.22
Environmental Dimension [I understand the importance of reducing carbon footprints to protect the environment.]	205	3.39	1.13
Environmental Dimension [I know what actions can be taken to reduce water pollution.]	205	3.48	1.15
Environmental Dimension [I am aware of the impact of plastic waste on marine ecosystems]	205	3.6	1.22
Economic Dimension [I am aware of the concept of circular economy and its benefits.]	205	3.24	1.08
Economic Dimension [I understand the importance of reducing carbon footprints to protect the environment.]	205	3.31	1.07
Economic Dimension [I am knowledgeable about how sustainable agriculture can impact local economies]	205	3.44	1.07
Economic Dimension [I know the role of corporate social responsibility (CSR) in promoting economic sustainability.]	205	3.34	1.17
Social Dimension [I am aware of how sustainable development can address issues of social inequality.]	205	3.11	1.1
Social Dimension [I understand the importance of community involvement in sustainability initiatives]	205	3.29	1.11
Social Dimension [I am knowledgeable about the impact of sustainable urban planning on community well-being.]	205	3.22	1.17
Social Dimension [I know how sustainable practices can improve public health outcomes.]	205	3.39	1.13
Personal Attitudes [I think it is important to educate others about sustainability issues]	205	3.45	1.26
Personal Attitudes [I feel a personal responsibility to engage in sustainable practices]	205	3.4	1.09
Personal Attitudes [I am motivated to learn more about sustainability through extracurricular activities or personal research.]	205	3.44	1.19
Personal Attitudes [I believe that individual actions can significantly contribute to environmental sustainability]	205	3.46	1.2
Career Perceptions [I believe that businesses will increasingly prioritize sustainability in the future job market]	205	3.22	1.21
Career Perceptions [I expect that my future employers will value my understanding of sustainability issues.]	205	3.37	1.11
Career Perceptions [I believe that incorporating sustainability into my career goals is crucial for long-term success]	205	3.33	1.17
Career Perceptions [I think having knowledge of sustainability practices will provide me with a competitive edge in my career.]	205	3.46	1.15

The data presents mean scores and standard deviations (SD) for various statements related to environmental awareness, economic practices, social sustainability, personal attitudes, and career perceptions among a sample of 205 participants. The findings indicate a generally positive awareness and attitude towards sustainability across these dimensions.

In the **Environmental Dimension**, participants demonstrated a moderate level of familiarity with climate change, reflected in a mean score of 3.39 and an SD of 1.22, suggesting variability in understanding. They also recognized the importance of reducing carbon footprints, with a similar mean score of 3.39 and an SD of 1.13. Awareness of actionable steps to reduce water pollution was slightly higher, with a mean of 3.48 and an SD of 1.15, indicating a positive attitude towards taking action. Notably, the highest mean score of 3.60 regarding the impact of plastic waste on marine ecosystems highlights significant concern among participants.

In the **Economic Dimension**, awareness of the circular economy was moderate, with a mean score of 3.24 and an SD of 1.08, indicating room for improvement in understanding this concept. Participants recognized the importance of carbon footprint reduction in economic contexts, reflected in a mean of 3.31 and an SD of 1.07. Knowledge regarding sustainable agriculture's impact on local economies was relatively high, with a mean score of 3.44 and an SD of 1.07, suggesting a positive perception of its benefits. However, understanding of corporate social responsibility (CSR) was moderate, with a mean of 3.34 and an SD of 1.17, indicating a need for further education in this area.

In the **Social Dimension**, the mean score of 3.11 for sustainable development addressing social inequality suggests lower awareness, with an SD of 1.10 indicating a need for more focus in this area. Participants showed a moderate understanding of community involvement in sustainability initiatives, with a mean of 3.29 and an SD of 1.11. Knowledge about sustainable urban planning's impact on community well-being was also moderate, with a mean score of 3.22 and an SD of 1.17. However, participants demonstrated a good understanding of how sustainable practices can improve public health outcomes, reflected in a mean score of 3.39 and an SD of 1.13.

Regarding **Personal Attitudes**, participants expressed a strong belief in the importance of educating others about sustainability issues, with a mean score of 3.45 and an SD of 1.26. They felt a moderate sense of personal responsibility to engage in sustainable practices, with a mean of 3.40 and an SD of 1.09. A strong motivation to learn more about sustainability through extracurricular activities or personal research was indicated by a mean score of 3.44 and an SD of 1.19. Additionally, participants believed that individual actions could significantly contribute to environmental sustainability, with a mean of 3.46 and an SD of 1.20, suggesting a strong sense of agency.

In terms of **Career Perceptions**, the mean score of 3.22 indicates a moderate belief that businesses will prioritize sustainability in the future job market, with an SD of 1.21 suggesting some uncertainty. Participants generally expected future employers to value sustainability knowledge, reflected in a mean of 3.37 and an SD of 1.11. The importance of incorporating sustainability into career goals was moderately acknowledged, with a mean score of 3.33 and an SD of 1.17. Lastly, a strong belief that knowledge of sustainability practices will provide a competitive edge in careers was indicated by a mean score of 3.46 and an SD of 1.15, reflecting confidence in the relevance of sustainability in the job market.

H1: there is no significant relationship between the Environmental Awareness and Impact, Sustainable Economic Practices, Social Sustainability and Community Engagement, and Personal Commitment to Sustainability and the Career Perspectives on Sustainability.

Result:

Linear Regression							
Table 3: Model Fit Measures							
				Overall Model Test			
Model	R	R ²	Adjusted R ²	F	df1	df2	P
1	0.879	0.772	0.767	169	4	200	< .001

Table 4: Omnibus ANOVA Test					
	Sum of Squares	df	Mean Square	F	P
Economic Dimension (Sustainable Development)	119.6	1	119.58	30.74	< .001
Social Dimension (Social Equity and Sustainability)	19.5	1	19.46	5	0.026
Personal Attitudes (Sustainability Mindset)	132.6	1	132.61	34.09	< .001
Environmental Dimension (Environmental Sustainability)	10.5	1	10.45	2.69	0.103
Residuals	778	200	3.89		

Note. Type 3 sum of squares

Table 5: Model Coefficients - Career Perceptions (Sustainability-Oriented Career)							
						95% Confidence Interval	
Predictor	Estimate	SE	t	p	Stand. Estimate	Lower	Upper
Intercept	0.2462	0.5326	0.462	0.644			
Economic Dimension (Sustainable Development)	0.4084	0.0737	5.544	< .001	0.3823	0.2463	0.518
Social Dimension (Social Equity and Sustainability)	0.1456	0.0651	2.237	0.026	0.1388	0.0164	0.261
Personal Attitudes (Sustainability Mindset)	0.3308	0.0567	5.839	< .001	0.3455	0.2288	0.462
Environmental Dimension (Environmental Sustainability)	0.0902	0.055	1.639	0.103	0.0908	-0.0184	0.2

Data Summary				
Table 6: Cook's Distance				
			Range	
Mean	Median	SD	Min	Max
0.00814	6.02E-04	0.0244	5.72E-08	0.183

Table 7: Assumption Checks		
Durbin–Watson Test for Autocorrelation		
Autocorrelation	DW Statistic	P
-0.0248	2.05	0.698
Collinearity Statistics		
	VIF	Tolerance
Economic Dimension (Sustainable Development)	4.17	0.24
Social Dimension (Social Equity and Sustainability)	3.38	0.296
Personal Attitudes (Sustainability Mindset)	3.07	0.326
Environmental Dimension (Environmental Sustainability)	2.69	0.372
Normality Test (Shapiro-Wilk)		
Statistic	p	
0.82	.101	

The linear regression analysis conducted to assess the relationship between various dimensions of sustainability and career perceptions yielded significant results. The overall model fit measures indicate a strong relationship, with an R value of **0.879** and an R² of **0.772**, suggesting that approximately **77.2%** of the variance in career perceptions can be explained by the predictors included in the model. The adjusted R² of **0.767** further supports the model's robustness, and the overall model test was statistically significant ($p < .001$), indicating that the model is a good fit for the data.

The Omnibus ANOVA test results reveal that the Economic Dimension (Sustainable Development) had the highest F-value of **30.74** ($p < .001$), indicating a strong significant effect on career perceptions. The Social Dimension (Social Equity and Sustainability) also showed significance with an F-value of **5.00** ($p = 0.026$), suggesting that social equity considerations are relevant to career perceptions. In contrast, the Environmental Dimension (Environmental Sustainability) did not reach significance ($p = 0.103$), indicating that its impact on career perceptions may be less pronounced compared to the other dimensions.

Examining the model coefficients, the Economic Dimension had a positive estimate of **0.4084** ($p < .001$), indicating that as awareness of sustainable development increases, so do positive career perceptions. The Social Dimension also showed a positive relationship with an estimate of **0.1456** ($p = 0.026$), suggesting that social equity considerations contribute positively to career perceptions. The Personal Attitudes (Sustainability Mindset) dimension had a strong positive estimate of **0.3308** ($p < .001$), reinforcing the importance of personal attitudes towards sustainability in shaping career perceptions. However, the Environmental Dimension had a non-significant estimate of **0.0902** ($p = 0.103$), indicating that its influence may not be as strong as the other dimensions.

The data summary indicates that Cook's Distance values were within a reasonable range, suggesting no significant outliers affecting the model. The Durbin-Watson statistic of **2.05** ($p = 0.698$) indicates no autocorrelation in the residuals, supporting the assumption of independence. Collinearity statistics showed that the Variance Inflation Factor (VIF) values for all predictors were below the threshold of 10, indicating no severe multicollinearity issues. Finally, the normality test (Shapiro-Wilk) yielded a statistic of **0.82** ($p = 0.101$), suggesting that the residuals are normally distributed, which is a key assumption of linear regression. Overall, the results highlight the significant role of economic, social, and personal dimensions of sustainability in shaping career perceptions, while also indicating areas for further exploration, particularly regarding environmental sustainability.

Limitations of the Study

This study has several notable limitations:

- **Sample Size:** The 205 participants may limit the generalizability of the findings. A larger sample would enhance representativeness.
- **Cross-Sectional Design:** The snapshot nature of the study restricts understanding of changes over time. A longitudinal approach would provide deeper insights.

- **Self-Reported Data:** Reliance on self-reports may introduce biases, such as social desirability. Objective measures could enhance validity.
- **Focus on Undergraduate Students:** The exclusive focus on undergraduates' limits applicability to other groups, like graduate students or professionals.
- **Limited Scope of Sustainability Dimensions:** The study may not cover all relevant sustainability aspects. Future research could explore additional dimensions.

Discussion and Conclusion

Discussion

This study examined the relationship between various dimensions of sustainability—environmental awareness, sustainable economic practices, social sustainability, and personal commitment to sustainability—and career perceptions. The findings are largely consistent with existing literature on sustainability competencies, with some notable distinctions.

Environmental Awareness and Career Perceptions

Contrary to expectations, the environmental dimension did not show a significant relationship with career perceptions (estimate = 0.0902, $p = 0.103$). This finding contrasts with prior studies, such as those by Kiron et al. (2017) and Lubin & Esty (2010), which emphasize that environmental sustainability is increasingly prioritized by businesses in response to regulatory pressures and consumer demand for environmentally conscious practices. These studies highlight the growing need for employees with the capacity to integrate environmental considerations into business strategies.

However, the non-significant results in the current study may be attributed to the relatively young sample, which may lack practical exposure to the environmental policies and strategies that are prominent in workplace contexts. Wiek et al. (2011) also noted that while environmental sustainability is valued by younger individuals, their understanding of its direct impact on career prospects may be limited. This suggests a gap between environmental awareness and its perceived relevance in career planning among younger demographics, particularly those at the early stages of their career development.

Sustainable Economic Practices and Career Perceptions

The economic dimension, particularly awareness of sustainable development, demonstrated the strongest relationship with career perceptions (estimate = 0.4084, $p < .001$). This result aligns with the findings of Lozano (2015) and Dyllick & Muff (2016), who argue that sustainable economic practices, including the circular economy, are increasingly recognized as key drivers of innovation and long-term profitability within businesses. As businesses seek to align with sustainable development goals, competencies related to economic sustainability are viewed as crucial for future employees.

Lubin & Esty (2010) similarly argue that sustainability serves as a competitive advantage for companies, particularly in areas such as resource efficiency, waste reduction, and carbon management. This supports the conclusion that participants perceive economic sustainability as highly relevant to their future careers, reflecting a broader understanding of the growing demand for these competencies in the job market.

Social Sustainability and Career Perceptions

Social sustainability was also a significant predictor of career perceptions, though the effect size was more modest (estimate = 0.1456, $p = 0.026$). This finding is consistent with research from UNESCO (2017), which emphasizes the importance of addressing social inequality as a component of sustainable development. Social sustainability, particularly in the context of equity, inclusion, and community well-being, is increasingly recognized by organizations and is becoming an integral part of corporate social responsibility (CSR) initiatives.

Previous research by Filho et al. (2019) explored sustainability in higher education and similarly found that younger professionals are concerned about social equity, which they view as an important aspect of their future work. However, Svanström et al. (2008) note that social sustainability is often underemphasized in educational programs compared to economic and environmental dimensions, which may explain the comparatively lower impact of social sustainability on career perceptions in the present study.

Personal Attitudes toward Sustainability and Career Perceptions

Personal attitudes toward sustainability were found to be a strong predictor of career perceptions (estimate = 0.3308, $p < .001$). This result is consistent with findings from Shields et al. (2002), who emphasize the role of personal values and attitudes in shaping sustainable behaviors. Individuals who are personally committed to sustainability are more likely to pursue careers that align with their values, which is further supported by Filho et al. (2018), who found that sustainability competencies are increasingly seen as essential for future career success.

The strong positive relationship between personal attitudes and career perceptions suggests that personal commitment to sustainability is not only a moral or ethical stance but also a strategic career consideration. As noted by Sitra (2018), businesses are seeking employees who are motivated to integrate sustainability into their roles. This finding aligns with the growing recognition that sustainability is becoming a core competency for professionals, particularly those entering the workforce.

Overall Model Fit and Interpretation

The overall model demonstrated a strong fit ($R^2 = 0.772$), indicating that 77.2% of the variance in career perceptions can be explained by the sustainability dimensions measured. This high explanatory power is consistent with studies by Wiek et al. (2011) and Filho et al. (2019), which similarly found that sustainability competencies are highly predictive of career aspirations. Wiek et al. (2011) emphasize that students exposed to sustainability education are more likely to prioritize sustainability in their future careers, suggesting that educational exposure plays a critical role in shaping career perceptions.

The results of this study suggest that young individuals are increasingly aware of the relevance of sustainability, particularly in the economic and personal dimensions, in the job market. The significance of these dimensions suggests that participants recognize the importance of sustainability for long-term career success and professional competitiveness.

Conclusion and Implications

The findings of this study are broadly consistent with existing research on sustainability and career perceptions, particularly in relation to the economic and personal dimensions. The non-significant result for the environmental dimension highlights a potential gap in young individuals' understanding of how environmental sustainability translates into career opportunities. As Wiek et al. (2011) suggest, direct exposure to sustainability initiatives, such as internships or project-based learning, may help bridge this gap and enhance the perceived relevance of environmental sustainability in career planning.

Educational institutions should continue to enhance sustainability-related curricula, with a focus on integrating environmental, social, and economic sustainability into career development programs. Given the increasing prioritization of sustainability by businesses, preparing future professionals with a comprehensive understanding of sustainability's role across various sectors will be essential for fostering a workforce equipped to meet the demands of a sustainable economy.

Future research should explore how practical exposure to sustainability initiatives influences perceptions of the environmental dimension, and whether such exposure can help align students' perceptions more closely with the growing body of literature that emphasizes the importance of environmental sustainability in career trajectories.

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