

## Analysis of Pro-Environmental Behavior in College Students: A Literature Review

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### Abstract

The Sustainable Development Goals (SDGs) serve as a global framework designed to address pressing social, economic, and environmental challenges, aiming to promote sustainable development and equitable progress worldwide. Higher education plays a critical role in advancing the implementation of these sustainable development goals and exploring how strategies based on Value-Belief-Norm (VBN) theory can influence pro-environmental behaviors among students. This study also seeks to emphasize the importance of higher education in facilitating the transition of values and beliefs in younger generations toward more environmentally responsible behaviors. It aims to empower younger generations to better understand their role in environmental preservation. These strategies could provide an effective approach to empowering higher education in supporting sustainability. This study adopts a literature review method, referring to previous research and current phenomena to analyze the role of VBN theory in promoting sustainability within higher education. Findings indicate that the VBN theory can enhance sustainable behavior among students, leading to improved sustainability performance in higher education. Furthermore, this study contributes to the development of VBN theory by exploring the influence of personality traits on students' sustainable behaviors. It also offers essential insights into how higher education institutions can develop more effective communication strategies and policies to foster a sustainable environment. These insights are expected to inform the design of strategies that not only enhance student behavior but also help higher education institutions achieve sustainability goals aligned with global SDG initiatives.

### Keywords

Higher Education, Pro-Environment, Students, Sustainable Behaviors.

## 1. Introduction

Alongside global advancements, the United Nations (UN) emphasizes the urgency of addressing social, economic, and environmental issues, which are increasingly interconnected and have direct implications for global inequality (Martiawan et al., 2023; Sulistyorini et al., 2024). The intensifying environmental crisis calls for a coordinated global response, part of which is the comprehensive framework provided by the Sustainable Development Goals (SDGs), encompassing seventeen targets that range from poverty alleviation to environmental conservation (Anggraeni, 2020; Pertiwi et al., 2024). Achieving these SDGs relies significantly on active participation across multiple sectors, including higher education, which plays a strategic role in shaping a generation committed to sustainable practices.

Higher education institutions are responsible for producing graduates who are not only academically proficient but also possess a high degree of environmental awareness (Hermina & Fauziah, 2022; Novianti et al., 2024). These graduates are expected to understand and contribute positively to environmental sustainability (Mariam et al., 2021). As noted by Whitley et al. (2018) and Qazi et al. (2022), it is essential for higher education to shape the mindsets of young people and encourage pro-environmental behaviors. However, challenges remain in ensuring that these sustainable behaviors are deeply internalized by students. Although higher education has made strides toward fostering pro-environmental behavior, effective strategies grounded in the Value-Belief-Norm (VBN) theory remain underexplored in addressing this challenge.

This study aims to analyze the role of the VBN theory in fostering sustainable behavior among university students and to explore strategies within higher education that could support this objective. This study emphasizes the importance of higher education in facilitating the transition of values and beliefs among young people towards a more environmentally responsible outlook. By empowering young individuals to better understand their role in environmental preservation, higher education can instill awareness and values aligned with the sustainable development agenda. The VBN theory is frequently employed as a theoretical framework for understanding how pro-environmental behavior is shaped and can be enhanced. VBN theory offers a robust foundation for explaining how individual values and beliefs contribute to the formation of norms and behaviors. According to Schwartz et al. (1992), the VBN theory links core individual values with beliefs about the importance of environmental conservation, which subsequently fosters social norms that promote pro-environmental actions.

University students represent a crucial demographic for applying the VBN theory, given that they are in a transitional phase where their values and beliefs are still forming or not yet fully developed (Pandowo et al., 2021). Higher education offers a powerful platform to facilitate this developmental process. Through academic and social interactions, students can be encouraged to develop sustainable behaviors by connecting their actions to values, beliefs, and prevailing social norms (Hübscher et al., 2022; Whitley et al., 2018; Asif, 2021).

As future leaders who will face significant environmental challenges, students have a key role in upholding sustainability. In this context, the VBN theory provides insight into how students can be motivated to act in alignment with their moral responsibility and awareness of the environmental impact of their actions. This awareness can lead them to engage in concrete actions, such as adopting environmentally friendly lifestyles. This study is structured as follows: first, a discussion of the VBN theoretical framework and relevant literature; next, the research methodology, analysis, and discussion; and finally, conclusions and recommendations for sustainable practices in higher education. A comprehensive literature review was conducted as an essential initial step to guide this study. This

study is based on a content analysis of several articles using keywords such as Higher Education, Pro-Environment, Pro-Environmental Behaviors of Higher Education Students, Sustainable Behaviors in Higher Education, Sustainable Behavior in Students, and Value-Belief-Norm Theory.

## **2. Literature Review**

The Value-Belief-Norm (VBN) theory is a conceptual framework used to understand pro-environmental behavior, encompassing three key elements: individual values, beliefs, and personal norms, which interact to shape behaviors that support environmental sustainability (Shah 2022). According to Schwartz (1992), the VBN theory refers to values as desired goals that integrate individuals and social entities, varying in their level of importance. Schwartz et al. (1992) argue that pro-environmental behavior stems from personal moral norms that drive such actions, suggesting that individuals are more likely to support sustainable practices when they believe the environment is in a precarious or threatening state. Consequently, these individuals may recognize the need for certain actions to mitigate potentially harmful impacts that could threaten both themselves and society.

Negm (2024) explores the application of VBN theory to cultivate pro-environmental behavior among higher education students, particularly through a social marketing approach aimed at fostering environmental values and attitudes. This research highlights that altruistic and biospheric values, which are associated with concern for others and the environment, significantly influence students' pro-environmental beliefs. Through a survey of 581 students across several private universities, Negm (2024) found that ingrained pro-environmental beliefs also affect campus norms, creating a collective behavior that supports sustainability. These behaviors include the use of public transportation, recycling activities, and energy conservation in students' daily lives. The study underscores the importance of higher education in establishing a foundation of pro-environmental values through relevant social campaigns, which can strengthen environmentally friendly behaviors in younger generations. The implications of this study suggest that universities hold a strategic role in creating a learning environment that fosters environmental awareness and encourages students' active engagement in sustainable practices both on and off-campus.

In the context of architectural education, Xie et al. (2021) apply the VBN theory to understand the psychological pathways that motivate architecture students to study green building design. This research focuses on how core values, such as biospheric and altruistic values that reflect concern for ecosystems and the well-being of other living beings, can motivate students to adopt sustainable design principles. Xie et al. (2021) gathered data from students at several architecture schools in southern China, utilizing a structural equation model to map the relationships among values, personal norms, and students' motivation to learn about green building. The findings reveal that biospheric and altruistic values influence students' personal norms, which then mediate between these values and their beliefs about the importance of green design. This research emphasizes that a deep understanding of environmental issues and awareness of ecological crises should be integral to architectural education curricula. Thus, students can be inspired to practice sustainable design that holistically considers environmental impacts. The study also highlights the importance of interdisciplinary approaches in architectural education to cultivate higher levels of sustainability awareness and social responsibility in future architectural practices.

The study by Kitchenham et al. (2010) also uses the VBN theory to evaluate the influence of service-learning projects on students' personal norms regarding sustainability responsibilities. This research seeks to understand to what extent participation in service-learning projects can affect personal norms related to

students' social and environmental responsibilities in two distinct programs Elementary Education and Social Education. Through a quasi-experimental design, the study measured students' personal responsibility norms before and after participation in service-learning projects focused on social and environmental sustainability. While no statistically significant differences were observed between pre- and post-intervention measurements, there was a tendency toward an increase in personal responsibility norms, demonstrating a positive impact on students' attitudes toward sustainability. The study also notes that service-learning projects play a crucial role in increasing students' engagement with sustainability issues and fostering attitudes of environmental responsibility. The implications of this research underscore the need to integrate socially based projects like service-learning into higher education curricula, particularly to enhance students' personal norms and social engagement with environmental and societal issues.

This review adopts previous research that demonstrates the strategic role of higher education in shaping pro-environmental norms and behaviors among students. The VBN theory, which emphasizes the influence of personal values on environmental beliefs and norms, has proven relevant in identifying psychological pathways that drive sustainable behavior. This theory provides an essential foundation for understanding how educational institutions can leverage value-based approaches to create a more environmentally conscious campus culture. Additionally, previous research provides insights into the importance of curricula that not only build students' technical competencies but also instill sustainability values and norms that have a lasting impact. Architectural education that combines technical aspects with environmental awareness, along with service-learning projects that enhance social responsibility, are concrete examples of how higher education can encourage students to take active roles in sustainable development.

As a further implication, higher education is expected to strengthen programs that support sustainability through interdisciplinary and participatory approaches. By enhancing curricula that integrate the VBN theory, campuses can cultivate a generation of individuals who are not only academically skilled but also morally responsible for environmental protection. Programs such as service-learning or campus-based social marketing campaigns can serve as strategies to increase students' awareness and engagement with sustainability issues. Higher education not only shapes skills but also builds pro-environmental character and ethics, which ultimately contribute positively to the achievement of sustainable development goals in the future. Therefore, this literature review focuses on the following research questions:

RQ1: How does the Value-Belief-Norm (VBN) theory contribute to fostering sustainable behavior among higher education students?

RQ2: What strategies can higher education employ to facilitate the transition of young people's values and beliefs toward more environmentally responsible behavior?

RQ3: How does higher education contribute to supporting the achievement of Sustainable Development Goals by fostering sustainable behavior among students?

### 3. Methods

This study aims to analyze the role of the Value-Belief-Norm (VBN) theory in shaping sustainable behaviors among university students and to explore higher education strategies for facilitating young people's transition in values and beliefs toward sustainable development. To achieve these goals, a Systematic Literature Review (SLR) approach was applied, allowing for a systematic screening and review of relevant literature tailored to the focus of this study. The SLR method was chosen because it enables researchers to identify, evaluate, and synthesize research findings in a structured manner (Kitchenham et al., 2010). To ensure a comprehensive

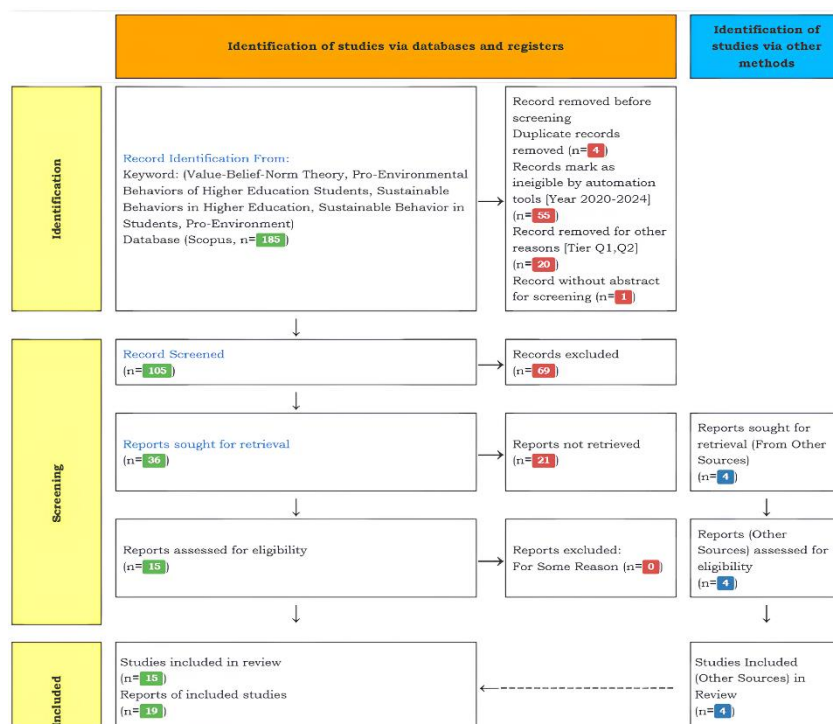
literature review, this study also adopted, the review also adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework, encompassing four main phases: identification, screening, eligibility, and inclusion. (Moher et al., 2009).

Data were collected through searches of several leading academic databases indexed in Scopus, using relevant keywords such as “Value-Belief-Norm Theory”, “Pro-Environmental Behaviors of Higher Education Students”, “Sustainable Behaviors in Higher Education”, “Sustainable Behavior in Students”, and “Pro-Environment”, with the assistance of the Watase Uake website. During the identification stage, an initial search yielded 185 articles potentially relevant to the study’s topic. These articles were then screened using predetermined inclusion and exclusion criteria to maintain the quality and relevance of results and to reduce the risk of bias in the literature selection process.

**Table 1.** Inclusion and Exclusion Criteria

<b>Inclusion Criteria</b>	<b>Exclusion Criteria</b>
Research articles published between 2020 and 2024.	Research articles not published between 2020 and 2024.
Articles indeed in Scopus from Q1 to Q2.	Articles indexed in Scopus from Q3 to Q4.
Research articles focusing on studies related to Sustainable Behavior among Higher Education Students and the Value-Belief-Norm Theory.	Research articles that do not focus on studies related to Sustainable Behavior among Higher Education Students and the Value-Belief-Norm Theory.
Research articles published in International Journals indexed in leading academic databases.	Research articles not published in International Journals.

In this study, sustainable behavior is defined as pro-environmental actions influenced by individual values, beliefs, and norms, as described by the VBN theory. Such behavior encompasses students’ attitudes toward sustainability and environmentally friendly actions that they incorporate into their daily lives. Data analysis was conducted through a screening and synthesis process of relevant studies, following the SLR approach. This approach emphasizes patterns, inter-variable relationships, and empirical findings that support or critique the VBN theory within the context of sustainable behavior in higher education. Data synthesis was carried out to gain a deeper understanding of higher education strategies for promoting sustainable behavior and to provide practical recommendations for educational institutions to advance sustainability efforts.



**Figure 1.** Prism Analysis Report

Figure 1 presents the search results for five keywords, identifying a total of 185 articles. These articles were then filtered based on publication year and article quality index, resulting in 105 articles that met the initial eligibility criteria for the screening process. During screening, 69 articles were excluded for not meeting the inclusion criteria, leaving 36 articles relevant to the study topic. At the Retrieval stage, a more detailed review was conducted, and 21 articles were deemed not aligned with the in-depth focus criteria. This left 15 articles assessed as highly relevant to the study topic. Additionally, 4 articles from other sources that met the inclusion criteria and showed high relevance to the study topic were added. In this study, a total of 19 articles met all criteria and were selected as the foundation for the literature review and further discussion.

#### 4. Results

The findings indicate that biospheric and altruistic values in the Value-Belief-Norm (VBN) theory have a significant influence on pro-environmental behavior among university students. Descriptive statistics reveal a high prevalence of these values, while inferential tests confirm their substantial role in predicting environmentally friendly behaviors among students. The literature review addresses the research question, showing that the higher the biospheric and altruistic values, the stronger the pro-environmental norms and behaviors among students. Contradictory findings are also included to provide a balanced perspective on the study's conclusions. Further findings show that awareness of consequences and attribution of responsibility act as mediators, strengthening the link between personal norms and sustainable behavior. This mediating effect underscores the importance of environmental awareness and a sense of responsibility among students in enhancing their sustainable behaviors on campus. These findings align with the VBN theory framework, which supports the role of personal values and beliefs about the environment in shaping ecological behavior.

Practically, these research results offer a foundation for higher education institutions in designing programs or policies that reinforce biospheric and altruistic values, such as through sustainability curricula or environmental campaigns that actively engage students. By reinforcing personal norms for pro-environmental actions, institutions can contribute to the achievement of SDG targets, particularly in education for sustainability. Furthermore, these findings suggest that interventions that enhance awareness of ecological consequences and strengthen a sense of responsibility can significantly impact pro-environmental behaviors among students. This highlights the importance of educational approaches that not only emphasize environmental knowledge but also foster awareness of individual impacts and responsibility toward the environment.

The purpose of this systematic review is to analyze the role of the Value-Belief-Norm (VBN) theory in shaping sustainable behavior among university students and to explore higher education strategies that facilitate the transition of young people's values and beliefs toward sustainable development, particularly within the context of Indonesia. This section of the study examines selected articles to address the research questions. The review findings are organized based on title, source, publisher, and key research findings from each article. Recent studies have highlighted the significant role of values, beliefs, and norms in shaping pro-environmental behavior (PEB) among students. For instance, research by Negm (2024) demonstrates that altruistic and biospheric values influence students' personal beliefs about the environment, which, in turn, shape their behaviors as green commuters, recyclers, and utility savers. Similarly, Xie et al. (2021) found that these values directly motivate students to engage with green building concepts, with personal norms mediating the relationship between values and behavior. These findings align with Arya & Kumar (2023), who suggest that the VBN model can be a useful framework for encouraging pro-environmental behavior through educational initiatives.

Further research, such as that by Ajina et al. (2024), highlights how values, beliefs, and norms from the VBN theory significantly influence behaviors such as reducing food waste. Media influence also emerged as a critical factor in shaping pro-environmental behavior. Meanwhile, studies like those by Wendlandt Amézaga et al. (2022) indicate that while knowledge and attitudes toward sustainability are moderate among students, they often do not translate into sustainable behaviors, underscoring the need for universities to integrate sustainability education into their curricula. Additionally, Raghu & Rodrigues (2022) emphasize the importance of biospheric values, altruism, and environmental knowledge in shaping attitudes toward sustainability, while Muñoz-García & Villena-Martínez (2021) illustrate the complex interrelations between learning engagement, altruism, and pro-ecological behaviors. Liu & Luo (2023) also underscore the impact of ideological and political education on ecological preparedness and environmental advocacy among students, suggesting that educational approaches significantly influence sustainable behaviors.

Null & Asirvatham (2023), reflect that social norms, perceived benefits, and self-efficacy strongly influence students' engagement in sustainable energy practices, highlighting the importance of effective communication strategies. Meanwhile, Avelar & Farina (2022) and Akhtar et al. (2022) focus on the role of economic and environmental attitudes in shaping students' self-reported sustainable behaviors, further emphasizing the impact of supportive policies and leadership on fostering sustainability in educational settings. In line with these findings, Bertossi & Marangon (2022) argue for a comprehensive approach that assesses personal factors, psychological determinants, and behavioral outcomes to design effective sustainability interventions in higher education. Ultimately, these studies contribute valuable insights into the multifaceted nature of pro-environmental behavior among students, suggesting that a combination of education, personal values, media

influence, and social norms can effectively encourage sustainable practices. Universities, therefore, play a pivotal role in shaping the environmental consciousness and behaviors of future generations through targeted initiatives and curricula that promote sustainability.

## 5. Discussion

Results of this study demonstrate that biospheric and altruistic value components within the Value-Belief-Norm (VBN) theory play a significant role in shaping pro-environmental behaviors among university students. This finding aligns with the VBN theory presented by Schwartz et al. (1992), which posits that certain personal values, particularly those encompassing environmental care and concern for the well-being of other living beings, can foster strong environmental beliefs known as the New Ecological Paradigm (NEP). This NEP subsequently forms the foundation for developing personal norms that motivate students to act in environmentally friendly ways. This study also found that awareness of consequences and ascription of responsibility act as mediating factors that reinforce students' personal norms toward sustainable behavior. According to Arya & Kumar (2023), students who understand the negative impacts of ecological imbalances and feel responsible for environmental sustainability are more motivated to adopt energy-saving and sustainable consumption behaviors on campus. Thus, these findings deepen our understanding of the VBN theory's application within higher education and affirm the importance of biospheric and altruistic values in encouraging pro-environmental behavior.

Research by Pelcher et al. (2023) on sports management students also found that biospheric values are associated with students' sense of environmental responsibility, contributing to the formation of personal norms for environmentally friendly behavior. This study underscores the role of eccentric values as a foundation for personal norms that promote sustainable behavior at the individual level. The study also highlights that higher education plays a central role in facilitating students' transition in values and beliefs toward more environmentally responsible behaviors. Effective strategies include integrating sustainability topics into the curriculum and using social marketing to promote pro-environmental behaviors on campus. According to Xie et al. (2021), a curriculum approach incorporating concepts of green building and sustainability can increase students' awareness of the importance of environmental behavior, especially in architecture majors. Through social marketing and sustainability campaigns within the campus environment, educational institutions can foster collective norms that support students' pro-environmental behaviors, such as recycling, energy conservation, and environmentally friendly transportation. Qazi et al. (2022) suggest that campuses serve as social environments that can strengthen personal norms through collective influence and shared values, ultimately supporting long-term behavioral change. This aligns with literature indicating that a pro-sustainability campus environment can enhance student engagement in environmental practices.

Furthermore, awareness of consequences and ascription of responsibility are identified as mediating factors that reinforce personal norms in the VBN theory. According to Mangas et al. (2021), students who comprehend the negative impacts of environmental imbalance and feel responsible for ecological preservation are more motivated to engage in energy-saving and conservation behaviors on campus. These findings are consistent with research showing that awareness of ecological consequences influences sustainable behavior intentions, especially when personal norms are activated (Mangas et al., 2021).

In the context of the Sustainable Development Goals (SDGs), particularly those related to environmental sustainability, this research suggests that higher education can serve as an effective catalyst in shaping sustainable behaviors among students.



According to Whitley et al. (2018), when students are encouraged to develop pro-environmental norms and sustainability values, they are more likely to internalize sustainable behaviors that benefit not only the campus environment but also the broader community. Higher education institutions not only provide academic education but also play a key role in preparing young generations committed to environmental sustainability. These findings are relevant to the VBN theory in the context of sustainability and emphasize the importance of developing strategies that integrate sustainable values, beliefs, and norms within higher education. With global awareness of the SDGs, especially in educational settings, higher education institutions can play a broader role in increasing environmental literacy and promoting sustainable social responsibility.

These findings indicate that strengthening pro-environmental values and norms through higher education is an essential step in supporting the achievement of the SDGs. As suggested by Song et al. (2022), higher education institutions are encouraged to create a campus environment that collectively promotes sustainability through structured programs, a curriculum that incorporates sustainability concepts, and environmental campaigns that encourage student participation. However, there are several challenges in applying the VBN theory on campus, such as resource limitations and the cultural diversity of students, which can influence their responses to sustainability programs. Therefore, future research is expected to broaden this understanding by conducting cross-cultural comparisons and exploring long-term evaluation methods to measure the impact of VBN-based sustainability interventions.

## **6. Conclusion**

This study highlights the significant role of the theory of value-belief-norm (VBN) utilized to advocate for the promotion of sustainability behavior among higher education students, as well as the strategies employed by educational institutions to facilitate the transition of values and beliefs toward pro-environmental actions. Biospheric and altruistic values, which are central to the VBN theory, have been found to enhance students' sense of responsibility and encourage pro-environmental behaviors. These values are crucial as they encompass individual concern for ecological balance and the well-being of other living beings. Higher education institutions play a central role by integrating sustainability curricula, green building concepts, and social campaigns, such as recycling and energy conservation programs, to strengthen collective norms and pro-environmental behavior among students.

Awareness of environmental impact and individual responsibility are key factors in reinforcing personal norms for environmental preservation in higher education, and they can drive sustainable change. This positions higher education as an effective catalyst for achieving the Sustainable Development Goals (SDGs) among students. Higher education institutions are not only academic centers but also carry social responsibility in preparing a younger generation committed to sustainability. The integration of sustainable values, beliefs, and norms within education must be prioritized to ensure higher education institutions produce graduates who are both environmentally and socially responsible.

The implications of this study also suggest that higher education should adopt an interdisciplinary and participatory approach by strengthening curricula that incorporate the VBN theory to support sustainability. Additionally, educational institutions should develop policies that motivate students to engage in pro-environmental behavior and contribute to the broad achievement of the SDGs. A limitation of this study is its focus on the campus environment without considering broader cultural and demographic differences, which may affect students' responses. Therefore, future research is expected to deepen the understanding of how cultural

and demographic factors influence pro-environmental behavior among students through cross-cultural comparisons, as well as explore long-term evaluation methods to measure the impact of VBN-based sustainability interventions.

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### **References**

- Ajina, A. S., Ali, S., Zamil, A., Khalid, N., & Bait Ali Sulaiman, M. A. (2024). Unleashing the potential of social media celebrities to promote food waste reduction in educational institutions: developing an extended model based on the value-belief-norm theory. *British Food Journal*, 126(7), 2787-2808.
- Akhtar, S., Khan, K. U., Atlas, F., & Irfan, M. (2022). Stimulating student's pro-environmental behavior in higher education institutions: An ability-motivation-opportunity perspective. *Environment, Development and Sustainability*, 24(3), 4128-4149.
- Anggraeni, A. I. (2020). Executive role in the use of information technology in public organisations. *Arthatama*, 4(1), 17-32.
- Arya, B., & Kumar, H. (2023). Value behaviour norm theory approach to predict private sphere pro-environmental behaviour among university students. *Environmental and Climate Technologies*, 27(1), 164-176.
- Asif, M. (2021). Evaluation of factors affecting carbon accounting information disclosure: A case of ASEAN countries. *Arthatama*, 5(2), 39-50.
- Avelar, A. B. A., & Farina, M. C. (2022). The relationship between the incorporation of sustainability in higher education and the student's behavior: self-reported sustainable behavior scale. *International journal of sustainability in higher education*, 23(7), 1749-1767.
- Bertossi, A., & Marangon, F. (2022). A literature review on the strategies implemented by higher education institutions from 2010 to 2020 to foster pro-environmental behavior of students. *International Journal of Sustainability in Higher Education*, 23(3), 522-547.
- Hermina, T., & Fauziah, H. (2022). How does Implementation Drive Actual Buying Behavior of Organic Coffee?. *Research Horizon*, 2(4), 465-475.
- Hübscher, C., Hensel-Börner, S., & Henseler, J. (2022). Social marketing and higher education: partnering to achieve sustainable development goals. *Journal of Social Marketing*, 12(1), 76-104.
- Kitchenham, B., Pretorius, R., Budgen, D., Brereton, O. P., Turner, M., Niazi, M., & Linkman, S. (2010). Systematic literature reviews in software engineering—a tertiary study. *Information and software technology*, 52(8), 792-805.
- Liu, C. H., Horng, J. S., Chou, S. F., Yu, T. Y., Lee, M. T., & Lapuz, M. C. B. (2023). Digital capability, digital learning, and sustainable behaviour among university students in Taiwan: A comparison design of integrated mediation-moderation models. *The International Journal of Management Education*, 21(3), 100835.
- Liu, S., & Luo, L. (2023). A study on the impact of ideological and political education of ecological civilization on college students' willingness to act pro-environment: evidence from China. *International Journal of Environmental Research and Public Health*, 20(3), 2608.
- Lucas Mangas, S., Marbán, J. M., Unanue Cuesta, M. C., Manso Argüelles, M. Á., & Romay Martínez, J. (2021). The role personal responsibility norms play in sustainable development for university students: The impact of service-learning projects. *Sustainability*, 13(13), 7330.
- Mariam, I., Budhiana, J., Permana, I., Dewi, R., Rahmanishati, W., Noviyanti, L., ... & Unmehopa, Y. F. (2021). Knowledge, attitudes, disaster training and self efficacy on disaster preparedness. *Research Horizon*, 1(5), 179-188.

- Martiawan, R., Achdiat, A., Ruyani, N. R., Ediyanto, E., & Jamaludin, M. (2023). Analysis of Food Security in Regional Context: West Java Provincial Government as a Case Study. *Research Horizon*, 3(1), 1-8.
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & PRISMA Group\*, T. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of internal medicine*, 151(4), 264-269.
- Mollaei, S., Minaker, L. M., Lynes, J. K., & Dias, G. M. (2023). Perceptions and determinants of adopting sustainable eating behaviours among university students in Canada: a qualitative study using focus group discussions. *International Journal of Sustainability in Higher Education*, 24(9), 252-298.
- Muñoz-García, A., & Villena-Martínez, M. D. (2021). Influences of learning approaches, student engagement, and satisfaction with learning on measures of sustainable behavior in a social sciences student sample. *Sustainability*, 13(2), 541.
- Negm, E. (2024). Recognizing the impact of value-belief-norm theory on pro-environmental behaviors of higher education students: considering aspects for social-marketing applications. *International Journal of Sustainability in Higher Education*, 25(2), 289-305.
- Novianti, N., Wulandari, D., Suyoko, D. S., & Perdana, M. S. (2024). Transformational Leadership Style in Increasing Economic Sustainability in the Banking Sector. *Research Horizon*, 4(4), 287-294.
- Null, D. C., & Asirvatham, J. (2023). College students are pro-environment but lack sustainability knowledge: a study at a mid-size Midwestern US university. *International Journal of Sustainability in Higher Education*, 24(3), 660-677.
- Pandowo, m. H. C., tewal, b., lengkong, v. P. K., & wenas, r. S. (2021). Sustainable Behaviour in Higher Education: Antecedents and Consequences. *Journal of Sustainability Science and Management*, 16(7), 80-92.
- Pelcher, J. A., Trendafilova, S., & McCullough, B. P. (2024). Environmental Behavior Framework Revisited: Where Do We Stand Ten Years Later and Where Do We Go from Here?. *Sustainability*, 16(17), 7380.
- Pelcher, J., Trendafilova, S., & Graham, J. A. (2023). An evaluation of the environmental values, beliefs, norms, and behaviors of sport management students in higher education institutions. *International Journal of Sustainability in Higher Education*, 24(8), 1687-1703.
- Pertiwi, R. M., Sumahardi, D., & Indriani, F. (2024). The Impact of Banking Security Features on Marketing Performance: Gold Indonesia 2045. *Research Horizon*, 4(4), 281-286.
- Qazi, Z., Qazi, W., Raza, S. A., & Yousufi, S. Q. (2021). The antecedents affecting university reputation and student satisfaction: a study in higher education context. *Corporate Reputation Review*, 1-19.
- Raghu, S. J., & Rodrigues, L. L. (2022). Solid waste management behavior among the student community: integrating environmental knowledge and situational factors into the theories of planned behavior and value belief norm. *Journal of Environmental Planning and Management*, 65(10), 1842-1874.
- Schwartz, S. H. (1992). *Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries*. Advances in experimental social psychology/Academic Press.
- Shah, M. H. (2022). Impact of green marketing strategy on business performance-mediating role of corporate image in construction industry of Kenya. *Arthatama*, 6(1), 1-11.
- Slomski, V. G., Tavares de Souza Junior, A. V., Lavarda, C. E. F., Simão Kaveski, I. D., Slomski, V., Frois de Carvalho, R., & Fontes de Souza Vasconcelos, A. L. (2024). Environmental Factors, Personal Factors, and the Entrepreneurial Intentions of University Students from the Perspective of the Theory of Planned Behavior: Contributions to a Sustainable Vision of Entrepreneurship in the Business Area. *Sustainability*, 16(13), 5304.
- Song, Y., Bao, H., & Shen, S. (2022). Understanding the influence of initial values of college students in shaping pro-environmental behavioral intention. *International Journal of Environmental Research and Public Health*, 19(15), 9730.
- Sulistiyorini, N., Puspitasari, D., Khasanah, A., & Perdhana, M. S. (2024). Expectations of Generation Z in the World of Work Towards a Golden Indonesia 2045. *Research Horizon*, 4(4), 275-280.
- Wendlandt Amézaga, T. R., Camarena, J. L., Celaya Figueroa, R., & Garduño Realivazquez, K. A. (2022). Measuring sustainable development knowledge, attitudes, and behaviors:

- evidence from university students in Mexico. *Environment, Development and Sustainability*, 24(1), 765-788.
- Whitley, C. T., Takahashi, B., Zwickle, A., Besley, J. C., & Lertpratchya, A. P. (2018). Sustainability behaviors among college students: An application of the VBN theory. *Environmental education research*, 24(2), 245-262.
- Xie, X., Qin, S., Gou, Z., & Yi, M. (2021). Incorporating green building into architectural education: what can we learn from the value-belief-norm theory?. *International Journal of Sustainability in Higher Education*, 22(3), 457-476.



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