Students' Attitudes and Perceptions Towards Green Ethic Behavior at Politeknik Negeri Bali

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Abstract. This study aims to determine students' attitudes and perceptions towards green behavior, both from knowledge through formal/informal education and awareness of the environment, motivation, and the role of social media in maintaining the environment sustainably. Engagement and awareness of green ethical principles are becoming more crucial as part of efforts to address climate change, save biodiversity, and maintain environmental quality. In the context of rising global concerns about environmental issues, understanding students' attitudes and perceptions towards environmentally friendly practices is increasingly important. Through both quantitative and qualitative approaches, data were collected from students from various disciplines at several campuses. Changing habits takes a relatively shorter time (about three months) compared to changing values, which takes around ten years. It is hoped that the findings will show that most students have positive attitudes and perceptions towards green ethical behavior, although there is still variation in their perceptions of environmental issues. Factors such as knowledge of environmental issues, personal values, and social norms were found to influence students' attitudes and perceptions toward pro-environmental behavior. The implications of these findings for the development of educational programs and environmental awareness on campus are discussed. This research makes an important contribution to understanding the way students' attitudes and perceptions can form the basis for promoting sustainable green ethical behavior in higher education environments, particularly at the Politeknik Negeri Bali as the center of excellence in green tourism. These factors will be used to develop steps that can provide sustainable green behavior

Keywords: Global Concerns, Green Ethical Behavior, Sustainable Environment

1 Introduction

Green ethic behavior refers to the awareness, attitudes, and actions of individuals or groups in considering and acting responsibly toward the natural environment. This phenomenon is becoming more relevant amid growing concerns about the negative impact of human activities on global ecosystems and human well-being. Engagement and awareness of green ethic principles are increasingly important as part of efforts to address climate change, preserve biodiversity, and maintain environmental quality. In this modern era, society faces of environmental challenges. Climate change, pollution,

A. A. N. G. Sapteka et al. (eds.), *Proceedings of the International Conference on Sustainable Green Tourism Applied Science - Social Applied Science 2024 (ICoSTAS-SAS 2024)*,
Advances in Economics, Business and Management Research 308,
https://doi.org/10.2991/978-94-6463-622-2_6

resource depletion, and various other negative impacts of human activities have become global concerns. In this context, efforts to strengthen green ethical behavior are considered one of the key solutions to addressing the environmental challenges faced by society.

Individuals' perceptions and attitudes toward green ethic behavior play a crucial role in determining the success of environmental efforts. Previous research shows that a person's level of awareness, knowledge, and concern for environmental issues influences their tendency to adopt environmentally friendly behaviors. Additionally, factors such as personal values, social norms, and economic factors also affect the way of individuals view and response to environmental issues. Environmental attitudes, concern for the environment, and environmental affection positively influence the purchase of green products as a form of green ethic behavior (Elafansa & Hartono, 2023).

The transparency of green attributes can influence green citizenship behavior by raising awareness about environmental issues and increasing consumer trust in products or services that have transparent green attributes (Amika & Riorini 2023). Therefore, conservation education has a high impact on green consumption behavior (Ramadhani et al., 2022). There is a positive influence of green marketing, green e-WOM (electronic word of mouth), green satisfaction, and interest in using plastic-free shopping bags on consumer behavior to reduce the use of plastic shopping bags, both partially and simultaneously (Humairoh & Annas, 2022). Environmental knowledge and environmental attitudes do not significantly affect green consumer behavior, whereas recycle behavior and political action have a positive and significant impact on green consumer behavior (Utami, 2020). Perceptions of green hotel practices have a positive and significant effect on the image of green hotels. The green hotel image positively and significantly influences the intention to stay at green hotels, which positively and significantly affects the intention to pay more and the intention to spread positive word of mouth about green hotels (Astawa et al., 2021).

Politeknik Negeri Bali (PNB) as vocational higher education institution is taking part in supporting green tourism technology also must actively participate in reducing global warming worldwide. The implementation of green ethic is established in the regulation for stakeholders (students, lecturers, staff, and alumni) in a partial manner. Therefore, this research aims to evaluate the implementation of green ethic among the students, who are predominant and constitute a relatively larger number compared to others. The students continuously interact on campus over periods of 4 (four) or 3 (three) years, respectively, in consecutive and alternate terms. Based on initial observations, the research questions can be formulated as follows: a. What are students' attitudes towards green ethic in general? b. What are the factors influencing the formation of attitudes and perceptions towards green ethic? c. How do students perceive practices that support green ethic, such as recycling, energy conservation, and the use of eco-friendly products? d. To what extent are students aware of environmental issues and their impact on attitudes towards green ethic? e. What role do social media and information play in shaping attitudes and perceptions towards green ethic?

The objectives of this research are: a. To determine students' attitudes towards green ethic in general.b. To identify factors influencing the formation of attitudes and perceptions towards green ethic.c. To understand students' perceptions of practices supporting green ethic, such as recycling, energy conservation, and the use of eco-

friendly products. d. To assess students' awareness of environmental issues and their impact on attitudes towards green ethic. e. To examine the role of social media and information in shaping attitudes and perceptions towards green ethic.

Green ethic is a concept/principle (ethical norm) that emphasizes the importance of balancing human needs with environmental sustainability by reducing the negative impact of human activities on the environment. Therefore, harmonizing technology and human behavior is crucial to achieving this goal. This principle includes the responsibility of individuals, groups, and organizations to minimize negative impacts on the environment, use natural resources sustainably, and support environmentally friendly practices. Green ethic encourages behaviors such as recycling, waste reduction, energy efficiency, and the use of more eco-friendly products.

Although many studies have been conducted on the green ethic, but research on attitudes and perceptions towards green ethic has not been conducted at Politeknik Negeri Bali, even though regulations on green behavior, which are part of green tourism and a center of excellence in technology, have been in place since September 1, 2020. The implementation of sustainable development to address environmental phenomena and its impact on internal resource management is an implementation of green ethic policy.

1.1 Theory of Attitudes and Perceptions toward Green Ethic

There are several theory of attitudes and perseptions toward green ethics, suc as: Theory of Planned Behavior (TPB). This theory poses that behavior is influenced by subjective attitudes, social norms, and perceived behavioral control. In the context of green ethic, this theory can be used to understand how attitudes toward environmentally friendly practices are influenced by individual perceptions of benefits, social norms, and self-control.

Value Theory: This theory considers individual values influence their attitudes and behaviors. In the context of green ethic, this theory can help in understanding how values such as sustainability, conservation, and environment influence attitudes and perceptions toward environmentally friendly practices.

Diffusion of Innovation Theory: This theory describes how innovations or new ideas spread through a population. In the context of green ethic, this theory can help in understanding the process of adopting environmentally friendly practices by society.

Environmental Psychology Theory: This theory studies the relationship between individuals and their environment. In the context of this research, environmental psychology theory can be used to understand how individual perceptions of the environment influence their attitudes and behaviors toward green ethic. Additionally, there are other theories about attitudes and perceptions toward green ethic, such as:

Value-Belief-Norm Theory (VBN): The VBN theory links personal values, beliefs, and personal norms in predicting pro-environmental behavior. This theory argues that individuals with altruistic or biospheric values tend to have strong beliefs about the importance of the environment, which then influences their personal norms to act environmentally friendly.

Norm Activation Model (NAM): This model emphasizes the importance of personal norms in predicting prosocial behaviour, includes environmental behaviour. The theory

suggests that awareness of the consequences of actions and personal responsibility to act can activate personal norms, which in turn influence behavior.

Attitude-Behavior-Context (ABC) Model: This model combines elements of attitude, behavior, and context in explaining environmental behavior. The ABC Model emphasizes that while a positive attitude toward the environment is important, actual behavior is also significantly influenced by contextual factors such as policies, access, and infrastructure

These theories provide various perspectives on how attitudes, beliefs, and norms influence individual actions toward environmentally friendly behavior. Sources for references include consumer behavior, environmental psychology, sustainability, and environmental ethics journals such as 'Journal of Environmental Psychology', 'Environment and Behavior', and 'Journal of Consumer Research', as well as books like 'Environmental Psychology' by Robert Gifford or 'Values and Environment: A Social Science Perspective' by Michael R. Redclift. Additionally, reports from environmental organizations such as WWF, Greenpeace, or the United Nations Environment Programme (UNEP) can also be valuable sources of information

Models that can be developed to facilitate the harmonization between humans and technology in supporting green ethics:

Green IT Model: This model includes strategies, policies, and practices for environmentally friendly information technology usage. It encompasses the use of energy-efficient and eco-friendly hardware and software, energy and fuel management, and the lifecycle management of technology products.

Ecolabel Model: This model represents environmental certification awarded to products and services that meet specific environmental standards. Ecolabels can help guide consumers to choose environmentally friendly products, supporting the harmonization between humans and technology in promoting green ethics.

Environmental Design Model: This model focuses on the early stages of technological product development. It emphasizes considering environmental impact throughout the product lifecycle; includes raw material use, production, usage, and recycling or disposal of the product.

Electronic Waste Management Model: This model involves responsible and environmentally friendly practices for managing electronic waste. It includes the collection, sortation, and recycle of electronic waste to minimize the environmental impact of unused technology products.

Smart City Model: This model involves the use of technology to improve the quality of life and the environment in urban areas. It includes technologies that support sustainable mobility and transportation, energy management, and environmentally friendly waste management.

Sustainable Consumption Model: This model includes principles for the sustainable use of products and services, considering the environmental and social impacts associated with their use. It includes strategies for energy use, waste reduction, and choosing environmentally friendly products and services. In this study, a combination of several of the above theories is used, with the addition of local wisdom based on the Hindu concept of Tri Hita Karana to create a model that fits the conditions in Bali

2. Methodology

This research has been conducted at PNB which has 6 departments, includes Civil Engineering, Mechanical Engineering, Electrical Engineering, Accounting, Business Administration and Tourism Department. The respondent in actual are 185 respondents used in this research, but calculated as 174 respondents by using the Slovin formula with e=7,5% to produce the number of respondents as a sample in this study is:

$$n=\frac{N}{1+N\,(e)^2} \tag{1}$$

The data collection techniques in this research are conducted by questionnaires and documentation study. Questionnaires involve collect data by providing respondents with a set of written questions to answer. The questionnaire uses a Likert scale with the following criteria: Score 1 indicates Strongly Disagree, Score 2 indicates Disagree, Score 3 indicates Neutral, Score 4 indicates Agree, and Score 5 indicates Strongly Agree. Documentation study were used to collect data by reading reference books related to the research problem being discussed. The data analysed by descriptive statistic and factor analiysis.

3. Result and Discussion

3.1 Result

The semester distribution of students who responded to the questionnaire is predominantly from the second semester (82%), while the smallest representation is from the eighth semester (1,1%). The validity test on 41 indicators can be observed through the Scale Corrected Item-Total Correlation values. The DF values for the 41 indicators in this study are between 0.654 to 0.817 (all indicators are above 0.3). Therefore, these indicators are valid. It can be concluded that all indicators are valid.

The reliability test on the 41 indicators can be assessed by looking at the Cronbach's Alpha if Item Deleted values. For Indicator 1, the value is 0.981 > 0.6, indicating that the indicator is reliable. The average Cronbach's Alpha value for the reliability test across all indicators is 0.981 > 0.6. Since all the tested indicators have values greater than 0.6, these indicators are considered reliable.

3.2 Discussion

Student Attitudes Towards Green Ethics. Students believe in the importance of environmental conservation for future generations and recognize it as a shared responsibility to reduce negative impacts on the environment through active participation, include the government and companies, in the sustainable use of eco-friendly products.

Concrete actions for environmental conservation, such as using public transportation are still rare and occasional (60%) among students. However, they often use eco-friendly products (40%) and plan to increase their environmental actions in the future (51%). Students possess knowledge and awareness of environmental issues, with 77.4% being quite familiar, primarily gained from mass media (83.2%). This awareness

can influence a more eco-friendly lifestyle (50%), even though they have only occasionally participated in formal education on the topic, as they believe (56.2%) in the important role of individuals in protecting the environment.

Social and environmental influences affect 61.6% of students, besides friends and family (32.4%), in raising awareness of environmental issues (72.4%). Students are still not very active in activities or organizations focused on environmental conservation (92.5%), and they consider government and corporate policies inadequate in supporting environmentally friendly practices (63.7%). Perceptions of environmentally friendly practices, such as recycling and energy-saving, individual roles, and education or information, influence attitudes and actions toward the environment (78.4%).

Attitudes and perceptions toward environmental issues are seen as serious problems, and students believe (88.7%) that individual actions can significantly contribute to environmental conservation (89.2%) by considering eco-friendly products and taking action to protect the environment (63.8%).

Regarding social media use and environmental information, most students frequently use social media (78.4%), but only sometimes (70.6%) follow information/pages about environmental practices online. This mainly provides additional knowledge about green ethics (64%), as they rarely and sometimes discuss environmental issues (60.8%). Although social media moderately motivates (68.6%) adopting more eco-friendly actions, students feel somewhat responsible for spreading positive environmental information (63.8%) and may plan to share content related to green ethics on social media (63.8%).

Every small action can make a difference; by working together, society can create more sustainable future for themselves and future generations. It is also important to remember that green ethics is an important issue. Marginalized communities are often the most affected by environmental issues and should have a voice in developing solutions. Society must collaborate to ensure that the transition to a sustainable future is fair and inclusive for everyone.

Raising public awareness and education about environmental issues through various programs and campaigns in schools, communities, and the media is crucial. Society should have awareness of the importance of maintaining environmental cleanliness and paying more attention to nature. Hopefully, society will become increasingly aware that green ethics are crucial for life. Therefore, the government should conduct more outreach to the public and provide solutions to existing problems in various regions. Public awareness of nature and the environment should include clear and accurate information about environmental issues, includes their impact on our daily lives and the planet's future. Provide training and support to the community to develop local environmental projects, such as community gardens or recycling programs. Personal awareness of environmental conservation is crucial, including not littering. The awareness of environmental issues is essential for influencing attitudes towards green ethics. There should be outreach to areas to inform the public about the potential future impacts of environmental degradation and to enhance attitudes towards green ethics. Self-awareness about protecting the environment needs to be increased and taught from an early age. The government's role should be more proactive in supporting environmental conservation activities. By working together to raise awareness and understanding of environmental issues, society will be more concerned and responsible towards the environment and encourages the adoption of more sustainable behaviors

and decisions. Society should reduce the use of substances that can deplete the ozone layer and cause global warming.

Factor Naming and Interpretation. Factor names were chosen by examining the highest loading factor values for each factor, determined based on the highest loading factor values:

Attitudes Toward Green Ethics: It is not only should current humans consider the environment as an essential part of life and sustainability on this planet, but also in Hindu teachings, this is known as Palemahan (harmonious relationship between humans and the environment).

Environmental Actions: Actual actions are necessary to preserve the environment for future generations beyond the theoretical knowledge.

Knowledge and Awareness of the Environment: As inhabitants of this planet, humans must have knowledge and awareness of the environment (green ethics).
Social and Environmental Influences: The way society interacts with the environment influences the future quality of life.

Educational Experience, Participation, and Sustainability Assessment: Education impacts participation in environmental sustainability efforts.

Perceptions of Environmentally Friendly Practices: There is a need for tangible actions towards the environment, rather than just theoretical ideas.

Attitudes and Perceptions of Environmental Issues: Environmental issues are serious matters requiring attention; individual actions can significantly contribute to environmental preservation and support green ethics.

Use of Social Media and Environmental Information: Social media plays a role in motivating environmental conservation through the dissemination of inspiring content.

Human attitudes and perceptions towards environmental conservation can generally be fostered from an early age, create the sustainability of green ethics principles crucial for minimizing negative impacts and ensure environmental sustainability for future human welfare. Based on research results, both validity and reliability met the criteria, as the conditions for using factor analysis. The total of 41 indicators were used, it formed 8 factors: Attitudes Towards Green Ethics, Environmental Actions, Environmental Knowledge and Awareness, Social and Environmental Influences, Educational Experience, Participation and Assessment of Sustainability, Perceptions of Environmentally Friendly Practices, Attitudes and Perceptions of Environmental Issues, Use of Social Media and Environmental Information.

It shows that the optimism among respondents to support green behavior (green ethics) can be achieved from these 41 indicators. This awareness can ensure the sustainability of human life, as humans are capable of properly maintaining the environment.

Failure to conserve the environment can negatively impact green ethics principles, including:

Increased environmental impact: The use of non-environmentally friendly technology or the lack of skills in using environmentally friendly technology can exacerbate environmental impacts, such as greenhouse gas emissions and the production of waste that is harmful to the environment and human health. This will threaten the human life in the future.

Economic losses: If non-environmentally friendly technology is widely used without efforts to mitigate its impact, it can result in economic losses for communities and companies that depend on threatened natural resources. If resources are not utilized optimally, the economic losses are imminent.

Social injustice: The disharmony between technology and humans can lead to social injustice, particularly for communities lacking access or skills to use environmentally friendly technology. This can widen social and economic disparities among different groups. Therefore, skills in using technology are essential in the era of Industry 4.0 and Society 5.0 which introduced by Japan in 2017.

Decreased quality of life: The increase in environmental impacts can degrade the quality of life for both humans and the environment, such as rising global temperatures and poor air quality that can cause health problems.

Unsustainability: The use of non-environmentally friendly technology, which is not harmonious with human needs that lead to long-term unsustainability, such as the depletion of natural resources and increased risks of climate change. This has been frequently highlighted globally due to the depletion of natural resources caused by climate change.

Millennials are a generation with relatively high environmental concern compared to other generations (Y. T. H. Nguyen & Nguyen, 2021). This is because millennials are quite independent in seeking and processing information related to environmental responsibility and as a form of self-affirmation associated with eco-friendly products.

Social media also plays a significant role in the dissemination of information about the current environmental conditions. Environmental conditions become alarming. This has led to the emergence of movements advocating for environmental responsibility (Li, Yang, Zhang, Li, & Chen, 2021). Responsibility is undertaken as a demonstration of the public's concern of the environment.

Religious life in Hinduism has given rise to a life philosophy known as Tri Hita Karana. Tri Hita Karana means "three causes of happiness." It consists of three elements: (1) the relationship between humans and God, (2) the relationship between humans and other humans, and (3) the relationship between humans and environment. This concept serves as the life philosophy of the Balinese people to maintain the balance of the universe and all its contents to achieve a prosperous and harmonious life.

Green IT Model: This model includes strategies, policies, and practices for using information technology in an environmentally friendly way. It encompasses the use of

energy-efficient and eco-friendly hardware and software, energy and fuel management, and the management of the technology product lifecycle.

Ecolabel Model: This model represents environmental certification given to products and services that meet certain environmental standards. Ecolabels can help guide consumers to choose environmentally friendly products and support the harmony between humans and technology in promoting green ethics.

Combination of Green IT Model, Ecolabel Model, and Local Wisdom (Tri Hita Karana): This model will be relevant to human life and has been recognized by the broader community (see Figure 1).

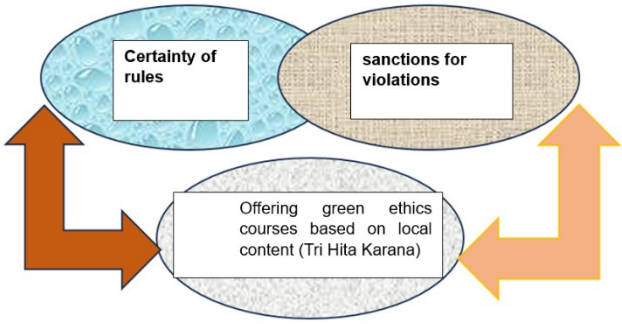

Figure 1. Development model student's attitude and perceptions toward green ethic behaviour

Conclusion

Based on the discussion in the previous chapter, the conclusions can be summarized as follows. Three main components have been group from 41 research indicators analyzed by factor analysis.

Attitude towards green ethics extends beyond contemporary concerns, as even Hindu teachings emphasize the importance of the environment through the concept of "Palemahan", which advocates for a harmonious relationship between humans and nature. Environmental action must go beyond theoretical knowledge, requiring practical efforts to ensure sustainability for future generations. As inhabitants of this planet, society must cultivate knowledge and awareness of the environment, reflecting a commitment to green ethics. Social interactions with the environment significantly influence the future quality of life, and education plays a critical role in fostering participation in environmental sustainability. Individuals' perceptions of eco-friendly practices demand tangible actions rather than mere intentions, highlighting the seriousness of environmental issues that call for active involvement. Individual contributions, no matter how small, can significantly impact environmental preservation and the promotion of green ethics.

Social media, in this context, holds potential as a tool to encourage environmental conservation by disseminating motivational content. In the effort to support green ethics, models such as the Green IT Model and the Ecolabel Model, which are based

on local wisdom like the Tri Hita Karana concept in Bali, can be employed. These models are particularly relevant when considering how local traditions can guide global sustainability efforts. Promoting green ethics, especially among students in vocational higher education, is essential for ensuring the sustainability of future generations. The models developed should not be limited to individual research contexts such as PNB, but should be expanded to influence policy formulation on green ethics across other vocational higher education institutions.

Acknowledgment

This research was fully funded by the Indonesian Minister of Education and Culture through the Bali State Polytechnic DIPA Budget 2024 Flagship Research Scheme.

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