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The Level of Responsible Tourism Among Millennials and Generation Z in the Sustainability of the Cetho Temple Tourist Destination

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Abstract

This study aims to investigates the determinants of responsible tourism behavior among Millennial and Generation Z visitors to Cetho Temple, a cultural and spiritual heritage site in Indonesia. Employing a mixed-methods approach, data were collected from 400 survey respondents and through in-depth interviews with tourists, destination managers, and local stakeholders. Quantitative analysis using SmartPLS 4 reveals that technology ($T = 4.842$; $p < 0.001$) and governance & policy ($T = 3.657$; $p < 0.001$) significantly influence responsible tourism practices. Social factors exert a marginal yet notable impact ($p = 0.045$), highlighting the role of peer and community influence. In contrast, educational, economic, environmental, and behavioral intent variables were not statistically significant. Qualitative insights corroborate these findings: Millennials tend to acquire responsible tourism values through formal education, while Gen Z relies more on social media. Despite its potential, technology remains underutilized by destination managers. The study recommends strengthening digital transformation and educational initiatives that integrate diverse sustainable tourism models, such as wellness, heritage, and community-based tourism, to foster long-term sustainability and responsible visitor behavior at heritage sites like Cetho Temple.

Keywords: Responsible Tourist; Millennial Generation; Generation Z; SmartPLS; Sustainability; Cetho Temple

Abstrak

Penelitian ini bertujuan untuk menganalisis faktor-faktor penentu perilaku pariwisata yang bertanggung jawab di kalangan wisatawan Milenial dan Generasi Z di destinasi budaya dan spiritual Candi Cetho. Dengan pendekatan metode campuran, data dikumpulkan melalui survei terhadap 400 responden serta wawancara mendalam dengan wisatawan, pengelola destinasi, dan pemangku kepentingan lokal. Analisis kuantitatif menggunakan SmartPLS 4 menunjukkan bahwa teknologi ($T = 4{,}842$; $p < 0{,}001$) serta tata kelola & kebijakan ($T = 3{,}657$; $p < 0{,}001$) berpengaruh signifikan terhadap praktik pariwisata yang bertanggung jawab. Faktor sosial memberikan dampak marjinal namun penting ($p = 0{,}045$), menyoroti pengaruh teman sebaya dan komunitas. Sebaliknya, faktor pendidikan, ekonomi, lingkungan, dan niat berperilaku tidak menunjukkan pengaruh yang signifikan. Temuan kualitatif mendukung hasil ini: generasi Milenial cenderung memperoleh nilai-nilai pariwisata bertanggung jawab melalui pendidikan formal, sementara Generasi Z lebih banyak belajar melalui media sosial. Meskipun berperan penting dalam membangun kesadaran dan perilaku berkelanjutan, teknologi belum sepenuhnya dioptimalkan oleh pengelola destinasi. Studi ini merekomendasikan penguatan transformasi digital dan program edukasi yang mengintegrasikan berbagai konsep pariwisata berkelanjutan, seperti wisata kesehatan, warisan, dan berbasis komunitas, untuk mendorong keberlanjutan jangka panjang dan perilaku wisatawan yang bertanggung jawab di destinasi seperti Candi Cetho.

Kata Kunci: Wisatawan Bertanggung Jawab; Generasi Milenial; Generasi Z; SmartPLS; Keberlanjutan; Candi Cetho

Introduction

The current trend of sustainable tourism is increasingly gaining global attention, with businesses, educators, the private sector, and the government taking a role in maintaining a balance between economic growth and preserving the environment and local culture. Data from the World Tourism Organization (UNWTO) indicates that by 2023, the number of international tourists will reach 87%, up from 38% in 2022. This puts pressure on the sustainability of natural resources, in particular. Therefore, responsible and environmentally friendly tourism models are crucial for developing tourist destinations and contributing to community well-being.

Visits by millennials and Generation Z have become key players due to their values, prioritizing social responsibility. This is also influenced by stakeholder policies, effectively contributing to sustainable environmental development (Sharmin et al., 2020). Responsible tourism emphasizes sustainable practices that minimize negative environmental, social, and economic impacts while maximizing benefits for local communities and travelers. By encouraging awareness of ecological footprints and social responsibility, this approach directly supports Sustainable Development Goals (SDGs) through environmental preservation and the support of local livelihoods.

As the future of global travel, Millennials and Generation Z are central to this shift. Generation Z, in particular, demonstrates high environmental awareness, which significantly influences their preference for eco-friendly practices (Gustiarini, 2023; Kurniasari et al., 2024). Their commitment is reflected in positive attitudes and a willingness to make personal sacrifices qualities essential for fostering sustainable tourism behavior (Ha et al., 2024; Kabir and Hassan, 2024; Mandalia and Fernanda, 2024; Ribeiro et al., 2023; Sharmin et al., 2020).

Despite this general interest in ecotourism, empirical data from Raja Ampat Regency reveals a gap in understanding; millennials there showed a suboptimal perception of marine conservation (58.47%). This is largely attributed to limited knowledge of territorial regulations and insufficient information dissemination (Gustiarini, 2023). To bridge this gap, ecotourism managers should segment millennial audiences based on universalism and horizontal collectivism values. Promotional strategies should specifically highlight novelty, ethics, nature, and cultural awareness to effectively engage this demographic (Kaihatu et al., 2020).

Tourist responsibility is a critical yet underexplored dimension of sustainable tourism. While frameworks such as Value-Belief-Norm (VBN) and the New Ecological Paradigm (NEP) suggest that altruistic, biospheric, and egoistic values drive responsibility, existing measurement standards often fail to comprehensively capture philanthropic and responsibility dimensions (Dias et al., 2021; Mathew and Kuriakose, 2018). Although standardizing sustainability indicators is essential for broad impact Blackstock et al., (2008) a significant research gap remains regarding how cultural and generational differences specifically between Millennials and Generation Z influence these behaviors.

As digital natives acutely aware of climate change, these two generations play a decisive role in navigating tourism toward sustainability. However, there is limited understanding of how their distinct value perceptions translate into actual behavioral practices (Min and Tan, 2021). For instance, while Generation Z shows a strong preference for socio-cultural values, exposure to sustainability narratives on social media does not consistently trigger pro-environmental action (Ha et al., 2024; Ribeiro et al., 2023; Sailesh et al., 2025). This study aims to bridge this gap by measuring the responsibility levels of Millennial and Generation Z tourists at Cetho Temple. Located on the slopes of Mount Lawu, Indonesia, Cetho Temple is a vital archaeological and spiritual

site. Despite its rich potential in architecture and active religious ceremonies, the site faces developmental hurdles, including limited professional human resources, funding, and suboptimal promotion (Rahmawati and Hanif, 2021; Santi, 2010).

Currently, the destination is highly popular among young travelers; approximately 55% of visitors are aged 16-25, largely motivated by the site's “Instagrammable” landscape for social media (Pertiwi, 2019). Recent visitor data reflects fluctuating trends, with 106,747 visits in 2023, 82,789 in 2024, and 40,028 recorded from January to July of the current year.

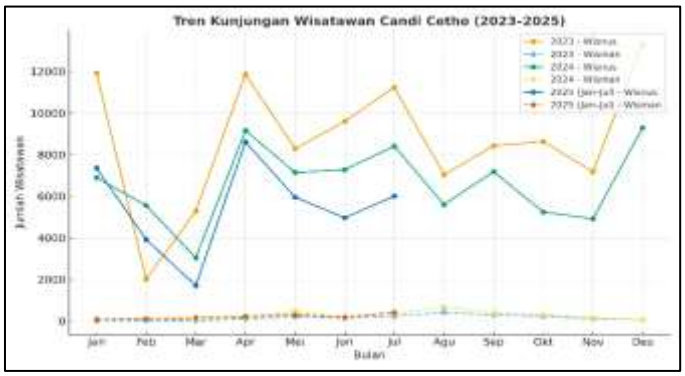

Figure 1. Cetho Temple Visitor Graph
(Source: Karanganyar Tourism Office Visit Data, 2025)

The information above shows that visits have gone down. There are a number of reasons for this, including the fact that there isn't a tourism management program, that new tourist attractions are opening up in Tawangmanggu, and that there aren't any activities for tourists to do while they are at Cetho Temple. A strategy is needed that refers to the Sustainable Tourism Management Framework. This framework focuses on how a tourist destination can keep its economic, socio-cultural, and environmental resources while still giving tourists a great experience.

Cetho Temple serves as a vital model for sustainable tourism by balancing cultural heritage preservation with economic growth (Purwanto, 2020; Setyanto, 2019). As an active religious and cultural landmark, the site is highly sensitive to overtourism and environmental degradation, making responsible tourism-where travelers actively minimize adverse impacts and promote conservation-essential to its longevity. This study focuses on Cetho Temple to evaluate the responsibility levels of Millennial and Generation Z visitors.

Given their role as catalysts for ecologically and culturally friendly change, understanding these demographics is crucial. By integrating the specific values of these generations, this research aims to establish a comprehensive framework for evaluating visitor responsibility, offering practical insights for more effective and sustainable destination management. The goal of this research is to determine the level of consciousness and accountability among millennial and Generation Z travellers regarding the sustainability of the Cetho Temple destination, as well as to examine the variables that influence their sense of responsibility.

As a reference for future research in the development of educational mobile applications as an effective tool to support tourist responsibility at Candi Cetho, this study is anticipated to yield actual data on the degree to which millennial and Generation Z tourists are aware of and practice responsible behaviour in maintaining the sustainability of the Candi Cetho tourist destination. It will also strengthen cultural and environmental preservation, supporting the development of sustainable tourism.

Method

This study uses a mixed-methods design with a sequential explanatory approach, combining a quantitative survey followed by qualitative in-depth interviews; primary data are collected from visitors to Candi Cetho (Gen Z and Millennials) and from local key informants; survey respondents are selected using stratified convenience sampling with on-site and online distribution targeting 400 valid respondents (200 Millennials, 200 Gen Z) determined by Cochran's formula for unknown population size, while qualitative informants are chosen purposively for in-depth interviews comprising four key stakeholders (managers, guides, local stakeholders) and eighteen visitors (nine Millennials, nine Gen Z); the main instrument is a closed questionnaire using a 5-point Likert scale covering educational, economic, social, environmental, technological, governance, policy, and behavioral dimensions, which was pilot-tested on approximately 35 respondents to assess and refine validity and reliability and to perform scale purification; data collection procedures include administering the questionnaire (on-site and online) for quantitative data and conducting semi-structured interviews for qualitative context; quantitative data are processed and analyzed using SmartPLS 4 with PLS-SEM procedures including tests for convergent and discriminant validity, path coefficients, R^2, and F^2 effect sizes, plus item reduction as needed, while qualitative data are analyzed thematically to explain and enrich quantitative findings, and all steps, instruments, inclusion criteria, and analysis procedures are documented to allow replication under similar conditions.

Result and Discussion

1. Small Group Inferential Analysis (35 Samples)

The sample consisted of 35 individuals, comprising 18 millennials and 17 Generation Z individuals. Using information from representative samples, inferential statistical analysis is a technique for estimating population characteristics or drawing conclusions. For researchers to comprehend the population, even if they do not examine every member, the objective is to generalise and test hypotheses. To investigate the cause-and-effect relationship between variables, the analysis utilised SmartPLS version 4 software.

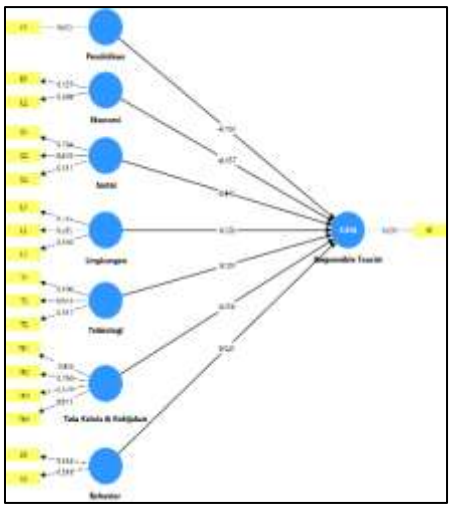

Figure 2. Latent Model of Research Variables
(Source: SmartPLS Data)

The latent variable model illustrates the structural relationships between seven independent constructs Education (H1), Economy (H2), Social (H3), Environment (H4), Technology (H5), Governance & Policy (H6), and Behavior (H7) and the dependent construct, Responsible Tourist (Y).

2. Indicator Purification

During the initial testing phase, several indicators did not meet validity criteria and were therefore removed from the model. Therefore, during the primary data collection phase with a larger sample, the researchers used only indicators proven to be valid and reliable. This step ensured a more focused instrument and more accurate and reliable analysis results. The following are the variables:

Table 1. Purification of Indicators from Convergent Validity and Discriminant Validity Results

Constructs Item	Indicators
Education	
	1. Level of education, knowledge, and skills
Economy	
	2. Travel costs
	3. Economic benefits for local communities
Social	
	4. Preferred experiences
	5. Support from social networks/communities for responsible behaviour
	6. Peer and family support for responsible behaviour
Environment	
	7. Concern for environmental issues and climate change
	8. Personal norms for protecting nature
	9. Sense of place attachment to the destination
Techology	
	10. Frequency of use of digital applications/platforms for sustainability information
	11. Technology as a facilitator of environmentally friendly practices (e.g. green accommodation)
	12. The image of destinations created by technology provides motivation
Governance and policy	
	13. Facilitation of sustainable practices among stakeholders
	14. Stakeholder collaboration
	15. Destination Social Responsibility (Destination CSR)
	16. Policies for mitigating the negative impacts of tourism
Behavioral intention	
	17. Personal values and ethics
	18. Motivation
Responsible Tourist	19. Knowledge of the concept of responsible tourism

Source: Data Analysis, 2025

The table above shows that some indicators did not meet the validity criteria. Therefore, the researcher used only the valid indicators, those in bold. This step ensures that the instruments in the model can stand alone conceptually and empirically without any overlap between constructs, which will then be tested on the main sample.

3. Main Data Analysis Results (n=400)

This analysis was conducted in stages through evaluation of the measurement model (outer model) and evaluation of the structural model (inner model).

a. Description of Respondent Characteristics (n=400)

The characteristics of the respondents in this study provide an overview of the profiles of Millennial and Generation Z tourists who participated in the study on Responsible Tourism at the Cetho Temple Tourist Destination. A total of 400 respondents were involved, consisting of tourists who were visiting or had visited Cetho Temple. Data collection was carried out by distributing questionnaires directly at the tourist site and online through a digital platform.

Tabel 2. Results of the Profile of Millennial and Generation Z Tourists in the Study

	N	%
Tourist Group		
Millennial Generation	200	50%
Generation Z	200	50%
Gender		
Male	164	41%
Female	236	59%
Highest level of education		
Junior High School	0	0%
Senior High School/Vocational School	185	46%
Bachelor	215	54%
Master	0	0%
Origin of Tourists		
Local	209	52%
National	191	48%
International	0	0%
Visit Frequency		
First visit	139	35%
2-5 visits	132	33%
<5 Visits	129	32%

Source: Data Analysis, 2025

This study involved 400 respondents, comprised of Millennials and Generation Z, with an equal proportion of 50% each, with the age criteria being Millennials (1981-1996) and Gen Z (1997-2012). In terms of gender, the majority of respondents were female (59%), while males comprised 41%. In terms of education, the majority had a bachelor's degree (54%) and a high school/vocational school (46%), indicating a secondary to higher education level. Based on tourist origin, 52% were local and 48% were national, indicating a predominance of domestic tourists at Cetho Temple. Frequency of visits showed that 35% were first-time visitors, 33% had visited 2-5 times, and 32% more than five times, indicating repeat interest in the destination. In general, the respondent profile described well-educated tourists with an interest in cultural and spiritual tourism, relevant to the concept of responsible tourism at Cetho Temple.

b. Convergent Validity

As seen from the factor loading values with values (>0.70) (J. Hair & Alamer, 2022), the following are the test results.

Tabel 3. Outer Loading Convergent Validity Results (400 Samples)

Instrument	Education	Economy	Social	Environment	Techonoly	Governance and policy	Behavior	Responsible Tourist	Note
P1	1.000								Valid
E2		1.000							Valid
S1			0.944						Valid
S2			0.941						Valid
L1				0.934					Valid
L2				0.940					Valid
T1					0.927				Valid
T2					0.901				Valid
T3					0.922				Valid
TKP2						0.934			Valid
TKP4						0.933			Valid
B2							1.000		Valid
RT								1.000	Valid

Source: Data Analysis, 2025

The results of the Convergent Validity test indicate that all indicators used in this study have outer loading values above the threshold of 0.70. This indicates that each statement item is able to adequately reflect the latent construct it measures.

c. Discriminant Validity

Discriminant Validity ensures that the measurement instrument is not related or only slightly related to instruments that measure other different variables.

Tabel 4. Cross Loading Discriminant Validity Results (400 Samples)

Instrument	Education	Economy	Social	Environment	Techonoly	Governance and policy	Behavior	Responsible Tourist	Note
P1	1.000	0.789	0.836	0.854	0.860	0.823	0.782	0.771	Valid
E2	0.789	1.000	0.856	0.871	0.854	0.822	0.778	0.752	Valid
S1	0.793	0.804	0.944	0.854	0.829	0.793	0.774	0.754	Valid
S2	0.784	0.810	0.941	0.836	0.808	0.772	0.741	0.731	Valid
L1	0.805	0.835	0.853	0.934	0.844	0.801	0.814	0.737	Valid
L2	0.796	0.799	0.829	0.940	0.836	0.810	0.746	0.774	Valid
T1	0.814	0.779	0.801	0.835	0.927	0.840	0.816	0.786	Valid
T2	0.771	0.792	0.799	0.798	0.901	0.818	0.773	0.771	Valid
T3	0.779	0.779	0.790	0.830	0.922	0.823	0.790	0.778	Valid
TKP2	0.778	0.768	0.783	0.809	0.843	0.934	0.779	0.774	Valid
TKP4	0.759	0.766	0.766	0.795	0.841	0.933	0.740	0.766	Valid
B2	0.782	0.778	0.804	0.831	0.865	0.814	1.000	0.736	Valid
RT	0.771	0.752	0.788	0.806	0.849	0.825	0.736	1.000	Valid

Source: Data Analysis, 2025

Overall, the factor loadings on the constructs themselves were much greater than their cross-loadings on other constructs. Thus, all indicators were declared discriminantly valid, as they were able to differentiate between dimensions measured empirically and theoretically.

d. Composite Reliability & Cronbach's Alpha

Testing the consistency between indicators in measuring the same construct ensures that the measurement instrument is accurate and reliable in measuring latent variables. The results can be seen from the Cronbach's Alpha (>0.70) Hair and Alamer, (2022) and composite reliability values.

Tabel 5. Composite Reliability & Cronbach's Alpha (400 Samples)

Instrument	Cronbach's alpha	Composite reliability	Remarks
Environment	0.861	0.935	Reliable
Social	0.874	0.941	Reliable
Governance & Policy	0.852	0.931	Reliable
Technology	0.905	0.941	Reliable

Source: Data Analysis, 2025

Based on the analysis results, all constructs showed Cronbach's Alpha values above 0.70 and Composite Reliability (CR) above 0.90, which means they met the reliability criteria. The Cronbach's Alpha and Composite Reliability (rho_c) for the Environmental Construct has a Cronbach's Alpha value of 0.861 and a Composite Reliability of 0.935, the social construct has a value of 0.874 and 0.941, the governance & policy construct has a value of 0.852 and 0.931, and the technology construct has a value of 0.905 and 0.941. It can be concluded that all constructs in this model have high reliability, so that the indicators that form them can be trusted to represent each latent variable.

e. Predictive Evaluation of the Model

Q^2 shows how well the model is able to predict the value of the indicator or dependent construct, namely Responsible Tourist, where $Q^2 > 0$, while RMSE (Root Mean Square Error) and MAE (Mean Absolute Error) measure the average prediction error between the predicted value and the actual value.

Tabel 6. Predictive Evaluation of the Model (400 Samples)

Instrument	Q^2predict	RMSE	MAE
Responsible Tourist	0.738	0.516	0.454

Source: Data Analysis, 2025

The PLS Predict analysis results show a Q^2predict value of 0.738, indicating the model has high predictive relevance for the Responsible Tourist variable, consistent with the explanatory nature of the study. The relatively small RMSE (0.516) and MAE (0.454) values indicate that the prediction model has a good level of accuracy and low prediction error. Thus, this model is considered to have strong predictive capabilities, in line with the recommendations (Shmueli et al., 2019).

f. R-Square (R^2) value

To see the ability of the independent construct to explain the dependent variable.

Tabel 7. R^2 Value (400 Samples)

Variabel	R-square	R-Square Adjusted
Responsible Tourist	0.749	0.744

Source: Data Analysis, 2025

The analysis results show that the R-square (R^2) value for the Responsible Tourist variable is 0.749, with an adjusted R-square value of 0.744. This finding indicates that approximately 74.9% of the variation in responsible tourists among millennials and generation Z can be explained by the predictor variables used in the research model. Meanwhile, the remaining 25.1% is influenced by other factors not included in the model. Referring to the criteria proposed by Hair et al., (2021) an R^2 value above 0.67 indicates a strong (substantial) level of explanatory power. Thus, the structural model used in this study can be said to have high predictive power in explaining the determinants of tourist responsibility. Figure 5 shows the PLS-SEM algorithm output to view the R^2 and original sample in the research model:

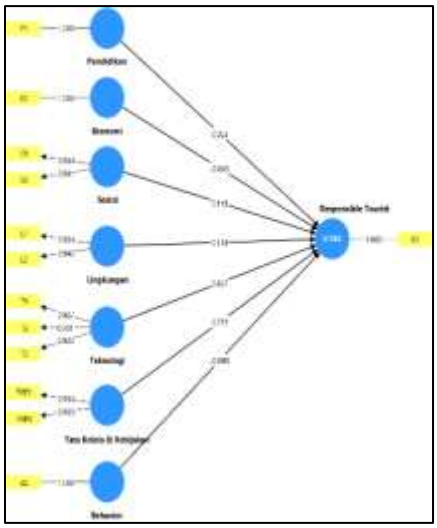

Figure 3. PLS SEM 4 Algorithm Model Output
Source: SmartPLS Data

g. F-Square Test

The results of the F-Square (f^2) test are used to assess the magnitude of the influence or effect of each independent variable on the dependent variable in the research model. This value helps assess how much each independent variable contributes to explaining the variation in the dependent construct after the variable is entered into the model.

Table 8. Results of The Effect Size F Test (400 Samples)

Instrument	Education	Economic	Social	Environment	Technology	Behavior	Governance and	Responsible	Note
Education								0.002	very small Effect
Economic								0.002	very small Effect
Social								0.009	very small Effect
Environment								0.007	very small Effect
Technology								0.084	Small Effect
Governance and Policy								0.049	Small Effect
Behavior								0.006	very small Effect
Responsible Tourist									

Source: Data Analysis, 2025

Based on the analysis results in the table above, the f^2 value was obtained for each predictor variable on Responsible Tourist. The f^2 value indicates the relative influence of an independent variable on the dependent variable after other variables are entered into the model. According to the criteria, it consists of four groups: $f^2 < 0.02$ (very small), $0.02 \leq f^2 < 0.15$ (small effect), $0.15 \leq f^2 < 0.35$ (moderate effect), $f^2 \geq 0.35$ (large effect) (Savitri et al., 2021). The results of this study indicate that the variables of education ($f^2 = 0.002$), economy ($f^2 = 0.002$), environment ($f^2 = 0.007$), social ($f^2 = 0.009$), and behavior ($f^2 = 0.006$) have a very small influence on Responsible Tourism. Meanwhile, technology ($f^2 = 0.084$) and governance & policy ($f^2 = 0.049$) show a small effect. Thus, it can be concluded that technology and governance & policy have the greatest contribution to efforts to increase responsible tourism at the Cetho Temple Destination, while the other variables have a relatively small influence.

h. Path Significance Test (Path Coefficient) and Interview Results

The path coefficient is a standardized regression coefficient that indicates the direct influence of one latent variable on another latent variable in a PLS-SEM structural model. A relationship is considered significant if the t-statistic is > 1.96 or the p-value is < 0.05 (Hair and Alamer, 2022; Shmueli et al., 2019).

Table 9. Path Coefficient Bootstraping Results (400 Samples)

Path Coefficient	Original sample	T statistics	P values	Note
(H1) Education → Responsible Tourist	0.053	0.913	0.181	Not significant
(H2) Economy → Responsible Tourist	-0.045	0.735	0.231	Not significant
(H3) Social → Responsible Tourist	0.118	1.697	0.045	Significant
(H4) Environment → Responsible Tourist	0.118	1.430	0.076	Not significant
(H5) Technology → Responsible Tourist	0.457	4.842	0.000	Significant
(H6) Governance & Policy → Responsible Tourist	0.272	3.657	0.000	Significant
(H7) Behaviour → Responsible Tourist	-0.080	1.501	0.067	Not significant

Source: Data Analysis, 2025

Based on the results of a bootstrapping path coefficient analysis of 400 samples, information was obtained regarding the influence of each variable on Responsible Tourism among Millennials and Generation Z in the context of the sustainability of the Cetho Temple tourist destination. The test results indicate that only a few variables have a significant influence on responsible tourism behavior. The Social variable (H3) showed a positive and significant influence with a T-statistic of 1.697 and a p-value of 0.045, indicating that the stronger the social and community support, the higher the tendency of Millennials and Generation Z to behave responsibly.

Additionally, with a p-value of 0.000, the Technology (H5) and Governance & Policy (H6) variables also showed a significant influence, suggesting that responsible tourism is greatly aided by technological advancements as well as sound destination policies and governance. Based on the interview results it was also found that both millennials and Gen Z have limited experience visiting sustainable destinations due to limited budget and vacation time. Management stated that both generations often visit during school holidays or weekends.

Peer and community influence also strongly encourage responsible tourism at Cetho Temple. The majority of Millennials and Gen Z visitors come due to classmates' invitations. Gen Z more often cites peer influence, while Millennials cite the role of the traveler and hiking community. Technology also plays a role as a source of information and motivation for travel for both generations. Generally, both generations learn about Cetho Temple from advertisements for hotels or villas in the area, jeep tour packages, and travel agent promotions. According to Generation Z, TikTok is a popular platform for finding information about Cetho Temple.

Both generations frequently use Google Maps, even on their first visit, due to difficult directions and steep, branching roads. However, some generations report that signal signal is sometimes a barrier to accessing Google Maps due to the high altitude. Cetho Temple management stated that there is no information highlighting sustainability on social media, due to the lack of a compromise between the Tourism Office and the

Conservation Agency in the sustainability campaign. Millennials and Generation Z also stated that the image created by technology for Cetho Temple still consists of general information, such as history and Hindu places of worship, without specific information about educational or environmental programs in line with sustainable tourism principles.

Both millennials and Gen Z groups stated that local communities are involved as parking attendants, security guards, and food and beverage providers to boost the local economy. Temple supervision involves the Tourism Office and Temple Management, and the involvement of tourism groups (Pokdarwis) in providing cloth for tourists. Several policies at Cetho Temple restrict access to certain areas in the upper area. Millennials disagreed with them because they lacked clear information. The policy on wearing cloth and limiting visiting hours, which supports and respects local culture, significantly influences millennials and Gen Z in maintaining the culture and cleanliness of the temple area.

However, Gen Z informants stated that support for facilities, digital information related to the history of Cetho Temple, educational programs, and standby guides is still limited. On the other hand, p-values greater than 0.05 indicated that the variables of Education (H1), Economy (H2), Environment (H4), and Behaviour (H7) had no discernible impact on Responsible Tourism. This suggests that although these elements enhance the travel experience, they do not yet have a significant enough impact to influence travellers' decisions to travel sustainably directly.

The results of interviews with tourists and key informants (destination managers, local communities) also found the following things: First, Educational Factors: According to the majority of respondents who have visited Cetho Temple, formal education still falls short in explaining the concept of Responsible Tourism; they typically only know about preserving nature and culture, as well as maintaining a clean environment. According to the questionnaire sample results, which indicated that 53.1% of respondents held a bachelor's degree, Millennials typically acquire this knowledge through college, whereas Generation Z gains more knowledge from social media platforms like TikTok.

Second, Economic Factors: Cost considerations are an important factor in decisions about responsible behavior. Millennials and Generation Z visiting Cetho Temple tend to choose environmentally friendly options if the price is affordable. However, some also expressed the importance of direct economic benefits for local communities, such as contributing to the purchase of food and drinks from local communities around the destination. Third, Environmental Factors: Environmental concern emerges within personal norms due to the understanding of Cetho Temple as a Hindu place of worship.

This is understood by preserving the environment, disposing of trash properly, refraining from eating and drinking in the temple area, and refraining from walking on the grass around the temple to protect the natural environment. However, inconsistent behavior remains, particularly among Generation Z, driven by the desire to find the best photo spots, leading to trampling on the grass around the temple. Fourth, Behavioral Intentions: The intention of millennial and Gen Z tourists to behave responsibly exists, but is not always consistent in practice, due to the lack of program support that involves tourists in maintaining economic, socio-cultural, and environmental resources while providing a memorable tourism experience.

All respondents stated that the motivation of millennial and Gen Z generations to visit the Cetho Temple Destination was only because they wanted to do light, relaxing healing activities, this was due to the location of Cetho Temple which is at the height of Mount Lawu. Overall, these findings support the idea that social factors, policy support, and technology use have a greater impact on the responsible behaviour of Millennials and

Generation Z at the Cetho Temple Destination than do individual characteristics such as behaviour and education. Thus, enhancing social networks, introducing eco-friendly technology, and enacting destination governance regulations that support sustainability should be the primary goals of initiatives aimed at boosting responsible tourism.

4. The Level of Responsible Tourism of Millennial and Generation Z Tourists in the Sustainability of Cetho Temple Tourist Destination

The research findings show that the level of responsible tourism among millennial and Generation Z tourists at Cetho Temple is still in the high category, with an R-square value of 0.749 and an adjusted R-square of 0.744. This value indicates that approximately 74.4% of the variability in tourist responsibility can be explained by factors such as education, economics, social, environmental, technology, governance and policies, and behavioral intentions. This indicates that the research model has strong explanatory power and can be used to understand the factors that influence responsible tourism among millennial and Generation Z tourists in the sustainability of the Cetho Temple tourist destination.

This is in line with the view Hair and Alamer (2022) which states that the R^2 value above 0.67 indicates substantial explanatory power in the PLS-SEM structural model. For the bootstrapping path coefficient that significantly influences responsible tourism, there are three variables, namely Social ($p = 0.045$), Technology ($p = 0.000$), and Governance & Policy ($p = 0.000$), and is strengthened by the results of the f^2 analysis, which shows that the variables Technology ($f^2 = 0.084$) and Governance & Policy ($f^2 = 0.049$) have a moderate effect on responsible tourism, while other variables show a small effect.

This finding is in accordance with the statement Savitri et al., (2021); Shmueli et al., (2019) The f^2 value of 0.02 is categorized as small, 0.15 as medium, and 0.35 as large. These quantitative results are confirmed by interview results that both generations utilize digital media such as TikTok, Google Maps, and social media to seek information about Cetho Temple, although the available information is still limited to historical aspects and natural beauty, and does not yet emphasize the sustainability aspects of Cetho Temple. This finding strengthens the literature on the role of smart tourism technology as a facilitator in increasing tourist awareness and behavior towards sustainable tourism (Abdullah et al., 2019; Pattiyagedara and Ranasinghe, 2024; Tan, 2021; Thi Thanh Nguyen et al., 2024).

According to Maki (2023), information adequacy is an important element in encouraging tourist responsibility. Meanwhile, in terms of governance and policy, tourists assessed that the policy on wearing cloth, limiting visiting hours, and involving local communities provided positive encouragement to respect culture and maintain cleanliness. However, they also highlighted the limited digital sustainability education and information facilities. This is consistent with Eichelberger et al., (2021); Tan (2021) which highlight the significance of cooperative policies and regulatory interventions in influencing the behaviour of the younger generation regarding sustainable tourism. From a social standpoint, peer and community influences are often the primary sources of responsible tourism. Whereas Millennials are motivated by groups of nature lovers or travellers, Generation Z is more influenced by invitations from peers and social media. The findings of Jasrotia et al., (2023); Schönherr and Peters (2024) that social norms and peer group influences play a significant role in shaping travellers' attitudes and behaviour toward responsible tourism practices are consistent with this phenomenon. Therefore, enhancing visitors' digital literacy, strengthening community-manager collaboration policies, and maximising the use of social media as a platform for sustainable tourism education and promotion can all contribute to improving the sustainability of the Cetho Temple tourist destination.

5. Factors Influencing Responsible Tourists of Millennial and Generation Z Tourists in the Sustainability of Cetho Temple Tourist Destination

The following variables affect responsible tourism, according to the findings of data triangulation:

a. Technological Factors: For Millennials and Generation Z, technology is an essential source of information and inspiration for travel. However, the use of technology by these two generations does not entirely align with the sustainable tourism principles in the context of the Cetho Temple destination. Due to a lack of cooperation between the Conservation Agency and the Tourism Office, there isn't a digital communication strategy that highlights the destination's sustainability features from a management standpoint. Because of this, Cetho Temple's image in digital media is still limited to generic details, such as its background and religious purposes; it does not represent the environmental and educational ideals that are consistent with the concept of sustainable tourism. Commercial content, such as hotel ads, tour packages, and travel agency promotions, continues to dominate the information landscape. TikTok is a significant source of information for Generation Z, while both generations use Google Maps due to accessibility issues. As a result, Cetho Temple utilises very little digital technology to disseminate knowledge and promote eco-friendly travel. Gupta et al., (2021); Pattiyagedara and Ranasinghe (2024); Tan (2021); Zhou et al., (2024) both from the management side and from the information search behavior of Millennial and Z generation tourists.
b. Governance and Policy Factors: Through the provision of amenities, information, and policies, destination governance helps to shape the responsible behaviour of Gen Z and millennial tourists at Cetho Temple. It has been demonstrated that laws prohibiting the wearing of traditional attire, setting visiting hours, and incorporating local communities in destination management initiatives all serve to promote responsible tourism, especially when it comes to respecting cultural values and maintaining a clean environment. This is consistent with studies Eichelberger et al., 2021; Song and Kang, (2023) that highlight how participatory policies and collaborative governance can enhance visitor adherence to rules and encourage ethical conduct in the context of sustainable travel destinations. To improve public services, such as providing students with information about ticket prices, offering guidance on enhancing digital literacy through easily accessible temple information at multiple locations, and offering tourism-based programs, management assistance is necessary. In this case, that assistance is provided by the Conservation Centre and the Tourism Office.
c. Social factors: This element also has a significant impact on how Millennials and Generation Z behave when travelling responsibly. It has been demonstrated that social networks, travel communities, and peers can influence travellers to act in ways that align with sustainable norms. While Millennials are more likely to be inspired by travel communities and environmental conservation organisations, Generation Z is more likely to be influenced by peer pressure and social media content. This finding supports the theory. According to Jasrotia et al., (2023); Schönherr and Pikkemaat (2024) social norms and support from local networks play a significant role in influencing travellers' intentions and behaviour toward responsible tourism practices.

In the meantime, behavioural intention, economics, education, and the environment continue to have a minor impact and are not yet statistically significant. In theory, these elements influence responsible tourism (Almeida-García et al., 2016; Mathew and Thankachan, 2019; Schönherr and Peters, 2024; Wu et al., 2022). However, the results show that their impact on the Cetho Temple is still below ideal. This is because there are limited educational opportunities at the location, few sustainable economic

incentives are offered, there are few facilities for environmental interpretation, and there are few concrete ways for visitors to engage in sustainable practices. Therefore, destination managers should prioritise educational digital strategies that emphasise sustainable values, strengthen cross-institutional collaboration between managers and the government, and empower local communities in social and cultural roles to enhance responsible tourism at Cetho Temple. This strategy aligns with the perspective of Schönherr and Peters (2024) which emphasises the importance of a systemic approach in promoting sustainable and conscientious traveller behaviour.

Conclusions

Based on quantitative findings (SmartPLS 4) and in-depth interviews, this study concludes that technology, governance & policy, and social factors are the main determinants of responsible tourism behavior among Millennial and Generation Z tourists at Cetho Temple, while the variables of education, economy, environment, and behavioral intention show a weak influence; technology-particularly social media and digital applications-serves as the primary source of information and inspiration but is still underutilized by managers for sustainability purposes, and social influence differs between generations (travel communities among Millennials; friends and social media among Gen Z). The practical implications call for destination sustainability strategies that integrate policy strengthening, the use of digital technology for education and sustainable promotion (e.g., short educational content, QR Code-based information boards), increased digital literacy and field education programs through collaboration with universities, and the empowerment of local communities as educational guides and managers of environmentally friendly products; These steps must be supported by active coordination between managers, local governments, and stakeholders to ensure the preservation of cultural values, the environment, and long-term economic benefits, as well as to shape the social identity of tourists in line with sustainability values.

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