

A STUDY ON FACTORS AFFECTING SMART TOURIST DESTINATION VISITING BEHAVIOR: A CASE STUDY IN CAN THO CITY, VIETNAM

Quoc Tuan HUYNH ^{1*} 

¹ Dong thap University, Faculty of Economics and Law, Dong Thap, Vietnam; hqtuan@dthu.edu.vn (Q.T.H.)

Citation: Huynh, Q.T. (2026). A study on factors affecting smart tourist destination visiting behavior: A case study in Can Tho city, Vietnam. *Geojournal of Tourism and Geosites*, 67(3), 2526–2535. <https://doi.org/10.30892/gtg.67360-1872>

Abstract: Smart tourism destinations have become increasingly important in the era of digital transformation and sustainable tourism development. Despite growing scholarly interest, previous studies have mainly examined technological factors or behavioral theories separately, leading to limited understanding of how digital perceptions and sustainability-oriented norms jointly influence tourist behavior. This study aims to extend the Theory of Planned Behavior by integrating e-attitude and resource efficiency norms to explain tourists' visit intention and actual behavior toward Smart tourism destinations. A quantitative research design was employed using survey data collected from tourists visiting smart tourism destinations. To conduct the study, the authors conducted direct interviews with 441 tourists visiting several smart tourist destinations in Can Tho City, Vietnam (Ninh Kieu Wharf, Cai Rang Floating Market, Son Island, Truc Lam Phuong Nam Zen Monastery, and Binh Thuy Ancient House) using a convenient sampling method. Convenience sampling was adopted due to accessibility and the exploratory nature of the study. The collected data were analyzed using Partial Least Squares Structural Equation Modeling. Reliability and validity of the measurement model were assessed through indicator loadings, composite reliability, average variance extracted, and discriminant validity. The structural model was evaluated using path coefficients, effect size (f^2), predictive relevance (Q^2), variance inflation factor (VIF), and standardized root mean square residual (SRMR). The results reveal that e-attitude significantly and positively influences visit intention and represents the strongest predictor in the model. Resource efficiency norms also positively affect visit intention, although with a relatively weaker effect. Furthermore, visit intention significantly influences actual visiting behavior and mediates the relationships between antecedent constructs and behavior. These findings indicate that tourists' decisions in smart tourism contexts are shaped by both digital perceptions and sustainability-oriented norms. The study contributes to the literature by extending TPB with digital and sustainability dimensions, thereby providing a more comprehensive explanation of tourist behavior in smart tourism environments. The findings also provide practical implications for destination managers and policymakers seeking to improve digital experiences and promote sustainable tourism practices.

Keywords: e-Attitude, e-Consumption behavior, resource efficiency norms, smart tourism destinations, visitor behavior

* * * * *

INTRODUCTION

The rapid advancement of digital technologies, including artificial intelligence (AI), big data analytics, the Internet of Things (IoT), and mobile platforms, is fundamentally transforming the tourism industry. In this evolving landscape, smart tourism destinations (STD) have emerged as an integrated development model that leverages digital infrastructure to enhance tourist experiences, optimize resource utilization, and support sustainable destination management (Gretzel et al., 2015; Mandić & Kennell, 2021). Unlike traditional destinations, STD operate as interconnected ecosystems where tourists, service providers, and governing bodies interact through real-time data and intelligent systems (Buhalis & Amaranggana, 2015). Existing research on smart tourism has primarily focused on technological infrastructure, destination attributes, and sustainability outcomes. Prior studies have emphasized the role of smart technologies in improving service quality, enhancing tourist satisfaction, and fostering sustainable development (Cavalheiro et al., 2020; Dabeedooal et al., 2019). Furthermore, studies grounded in behavioral theories-particularly the Theory of Planned Behavior (TPB)-have demonstrated that attitudes, subjective norms, and perceived behavioral control significantly influence tourists' behavioral intentions toward smart tourism destinations (Ajzen, 1991; Sun et al., 2020; Torabi et al., 2022).

However, despite these contributions, important gaps remain in the literature. First, from a theoretical perspective, existing studies largely rely on traditional behavioral frameworks such as TPB, which were developed in pre-digital contexts. These models primarily capture rational and cognitive evaluations but may not fully explain tourists' behaviors in technology-mediated environments, where digital interactions, online perceptions, and electronic experiences play a central role in decision-making (Hasan, 2022b; Jeong & Shin, 2019). Second, from a construct perspective, there is limited integration of digital-era psychological factors-such as e-attitude-into tourism behavior models. E-attitude reflects

* Corresponding author

individuals' evaluations of digital technologies and platforms, which are increasingly critical in shaping tourist decision processes (Hasan, 2022a; Berhe et al., 2020). In addition, sustainability-related norms, particularly resource efficiency norms, have been underexplored in the context of smart tourism behavior, despite their growing relevance in environmentally conscious travel (Farrow et al., 2017; Wang et al., 2018).

Third, from a contextual perspective, empirical evidence from emerging smart tourism destinations remains scarce. Most prior studies have been conducted in developed tourism markets, limiting the generalizability of findings to developing regions where digital transformation is still evolving (Novianti et al., 2022). In particular, cities such as Can Tho - an emerging tourism hub in the Mekong Delta of Vietnam-represent an important yet underexplored context for examining the interaction between digital transformation, sustainability, and tourist behavior.

To address these gaps, this study adopts an extended behavioral framework by incorporating e-attitude and resource efficiency norms into the analysis of tourists' visiting behavior toward smart tourism destinations. Specifically, this study aims to: (1) examine the effects of e-attitude and resource efficiency norms on tourists' intentions to visit STD, and (2) investigate the influence of visit intentions on actual visiting behavior.

By doing so, this study makes several contributions. Theoretically, it extends behavioral research by integrating digital and sustainability-related constructs into a unified framework, thereby providing a more comprehensive explanation of tourist behavior in smart tourism contexts. Empirically, it offers evidence from an emerging destination, contributing to the diversification of research settings in the smart tourism literature. Practically, the findings provide implications for policymakers and destination managers in designing strategies that enhance digital engagement and promote sustainable tourism development. Overall, this study responds to the growing need for a more nuanced understanding of tourist behavior in the digital era and contributes to advancing research on smart tourism destinations.

LITERATURE REVIEW

Research on STD has evolved significantly in recent years, particularly with the rapid advancement of digital technologies and the increasing emphasis on sustainability. The existing literature can be critically synthesized into three major research streams: (1) technology-enabled smart tourism systems, (2) behavioral models of tourist decision-making, and (3) digital consumption and sustainability-oriented behavior.

The first stream focuses on the role of smart tourism technologies (STTs) in shaping tourism ecosystems. Early studies conceptualize STD as technology-driven systems that integrate ICT, big data, and IoT to enhance tourist experiences and destination management. More recent studies have extended this perspective by emphasizing the complexity and multi-level nature of smart tourism systems. For instance, a recent systematic review (Yap et al., 2025) highlights that STTs function as interconnected systems in which technological attributes, mediating mechanisms, and contextual conditions jointly shape tourism outcomes under conditions of uncertainty and complexity. Similarly, emerging research has examined how smart tourism service ecosystems and digital platforms influence user experience and engagement, particularly in emerging markets (Qiao et al., 2026). Despite these advancements, this stream remains largely supply-oriented, focusing on technological capabilities while underexploring the psychological and behavioral mechanisms of tourists.

The second stream builds on established behavioral theories, particularly the TPB, to explain tourist intentions and actions. Prior studies consistently confirm that attitude, subjective norms, and perceived behavioral control significantly influence behavioral intention, which in turn predicts actual behavior. However, recent studies have begun to question the adequacy of traditional models in digitally mediated environments. For example, Inmor et al. (2025) propose a context-sensitive model demonstrating that tourist engagement with smart tourism services is shaped by multiple interacting conditions, including technological, social, and experiential factors. Likewise, Singh et al. (2025) highlight the role of technology engagement in strengthening place attachment through smart travel applications, suggesting that emotional and experiential dimensions extend beyond traditional cognitive evaluations. These findings indicate that while TPB remains a useful foundation, it may not fully capture the complexity of behavior in digital tourism contexts.

The third stream focuses on digital consumption behavior and sustainability-related constructs. With the increasing integration of digital platforms, artificial intelligence, and data-driven services, tourists' decision-making processes are increasingly shaped by digital interactions. Recent research shows that features of digital decision platforms significantly influence tourist experience and revisit intention (Qiao et al., 2026). At the same time, sustainability considerations-particularly resource efficiency and environmental norms-have gained increasing attention as key drivers of responsible tourist behavior. However, these two perspectives (digital behavior and sustainability) are often examined separately, leading to a fragmented understanding of tourist decision-making. A critical synthesis of these research streams reveals several important gaps. First, there is a lack of theoretical integration between technology-driven perspectives and behavioral theories, resulting in limited explanatory power for digitally mediated tourist behavior. Second, digital-era constructs such as e-attitude and technology engagement have not been systematically incorporated into mainstream behavioral models. Third, sustainability-related norms, particularly resource efficiency norms, remain underexplored in the context of smart tourism behavior. Finally, although recent studies (e.g., Yap et al., 2025) have begun to explore emerging markets, empirical evidence from developing smart tourism destinations remains limited.

To address these gaps, this study integrates insights from the three research streams by incorporating e-attitude and resource efficiency norms into an extended behavioral framework. E-attitude captures tourists' evaluations of digital technologies and platforms, while resource efficiency norms reflect socially embedded expectations regarding sustainable behavior. By combining these constructs with behavioral intention, this study aims to provide a more comprehensive explanation of tourists' visiting behavior toward smart tourism destinations, particularly in emerging contexts. Through this

integrative approach, the study contributes to bridging the gap between technology-driven, behavioral, and sustainability-oriented perspectives, thereby advancing the theoretical and empirical understanding of tourist behavior in the digital era.

Smart tourism destination visiting behaviors

Behavior is understood as specific actions of an individual that can be observed and measured based on widely accepted standards (Godey et al., 2016). Within the framework of behavioral theories, many studies affirm that behavior is a direct result of intention, and this intention is influenced by underlying psychological factors. Specifically, Sun et al. (2020) and Hasan & Aziz (2024) show that behavior is a function of intention, where intention is formed based on attitudes, subjective norms, and the individual's perceived behavioral control – consistent with Ajzen (1991) argument in the TPB. This implies that when individuals have a positive assessment of their behavior, receive support from their social environment, and believe in their ability to perform the behavior, they tend to translate their intention into actual action.

In the context of tourism, Ghosh & Mukherjee (2023) argue that tourist behavior reflects the entire decision-making process, including destination selection, trip execution, and evaluation of the experience at that destination. At the same time, Torabi et al. (2022) suggest that the behavior of visiting STD is significantly influenced by the subjective attitudes and norms of tourists. Based on these arguments, it can be argued that the behavior of visiting STD is a result of the visit intention, where the intention is formed not only from traditional elements of TPB but also from elements specific to the digital environment. Specifically, STD visit intention can be determined by online attitudes (e-attitude) and norms of resource utilization efficiency. These factors reflect how tourists value digital experiences, the degree of resource optimization when using technology, and their concern for sustainable tourism development.

This study adopts an extended behavioral framework grounded in the TPB (Ajzen, 1991), integrating digital-era and sustainability-oriented constructs to better explain tourist behavior in smart tourism destinations (STD). TPB has been widely applied in tourism research to predict behavioral intention and actual behavior (Han et al., 2010; Lam & Hsu, 2006). It posits that behavioral intention is the most immediate predictor of behavior, shaped by individuals' attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991). However, TPB was developed in a pre-digital context and primarily emphasizes rational cognitive evaluations. Recent studies suggest that such traditional models may not fully capture decision-making processes in digitally mediated environments, where interactions are increasingly shaped by online platforms, real-time information, and user-generated content (Jeong & Shin, 2019; Hasan, 2022b; Ghosh & Mukherjee, 2023). In addition, sustainability considerations have become increasingly important in shaping tourist behavior, particularly in smart tourism contexts (Mandić & Kennell, 2021; Wang et al., 2018). To address these limitations, this study extends TPB by incorporating two key constructs: e-attitude and resource efficiency norms.

E-attitude and Visit Intention

E-attitude refers to an individual's evaluative disposition toward digital technologies and online platforms used in tourism contexts (Hasan, 2022a; Berhe et al., 2020). In smart tourism environments, tourists rely heavily on digital interfaces such as mobile applications, online reviews, and real-time information systems, which shape perceptions and influence decision-making (Buhalis & Amaranggana, 2015; Gretzel et al., 2015).

Prior research indicates that positive attitudes toward digital technologies significantly enhance users' intention to adopt smart services and engage with digital platforms (Venkatesh et al., 2012). From a theoretical perspective, e-attitude can be considered an extension of the traditional "attitude" construct in TPB, capturing technology-mediated evaluations in digital environments. Accordingly, the following hypothesis is proposed:

H1: E-attitude positively influences tourists' visit intention to smart tourism destinations.

Resource Efficiency Norms and Visit Intention

Resource efficiency norms refer to socially shared expectations regarding responsible and sustainable use of resources (Farrow et al., 2017; Wang et al., 2018). In smart tourism contexts, sustainability is increasingly embedded in destination strategies, often facilitated by digital technologies that promote efficient resource use and environmentally responsible behavior (Mandić & Kennell, 2021). Norm-based theories suggest that individuals' behavioral intentions are influenced by perceived social expectations and moral obligations (Ajzen, 1991; Schwartz, 1977). In tourism, studies have shown that pro-environmental norms significantly affect tourists' decision-making and behavioral intentions (Han et al., 2010; Juvan & Dolnicar, 2014). Thus, resource efficiency norms can be conceptualized as an extension of subjective norms in TPB, emphasizing sustainability-oriented social expectations. Therefore, the following hypothesis is proposed:

H2: Resource efficiency norms positively influence tourists' visit intention to smart tourism destinations.

Visit Intention and Actual Behavior

Consistent with TPB, behavioral intention is the most direct predictor of actual behavior (Ajzen, 1991). In tourism research, visit intention has been widely validated as a strong predictor of actual travel behavior (Lam & Hsu, 2006; Sun et al., 2020). In the context of smart tourism, tourists who develop strong intentions based on digital perceptions and sustainability norms are more likely to translate these intentions into actual visiting behavior.

Thus, the following hypothesis is proposed:

H3: Visit intention positively influences actual visiting behavior toward smart tourism destinations.

Mediating Role of Visit Intention

TPB also suggests that intention serves as a central mediating mechanism linking psychological factors and actual

behavior (Ajzen, 1991). Empirical studies have confirmed that intention mediates the relationship between attitudes, norms, and behavior in tourism contexts (Han et al., 2010; Sun et al., 2020). In this study, visit intention is expected to mediate the effects of both e-attitude and resource efficiency norms on actual behavior.

Therefore, the following hypotheses are proposed:

H4: Visit intention mediates the relationship between e-attitude and actual visiting behavior.

H5: Visit intention mediates the relationship between resource efficiency norms and actual visiting behavior.

Based on a literature review and the formulation of hypotheses regarding the relationships between latent variables, the author proposes a research model –“Factors Affecting Smart Tourist Destination Visiting Behavior: A Case Study in Can Tho City, Vietnam”– as illustrated in Figure 1 below.

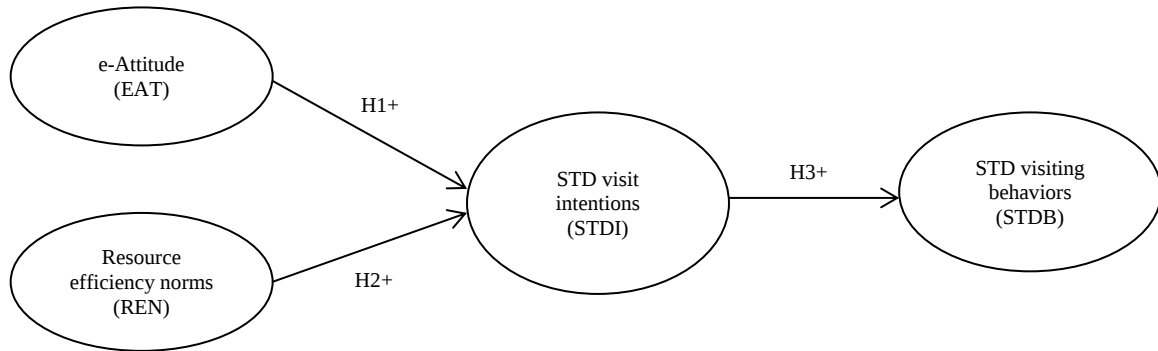


Figure 1. Proposed research model

RESEARCH METHODOLOGY

Measurement scale

All measurement items were adapted from previous studies to ensure the validity of the scale. The content of the scale was slightly modified to align with the research context. Each measurement item was evaluated using a 5-point Likert scale. Refer to Table 1 for a detailed overview of all scales used in this study.

Table 1. Interpretation of observed variables in the research model

Construct	Code	Observed variables	Source
e-Attitude	EAT1	I have a positive view on the application of information and communication technology (ICT) in smart tourism destinations	Hasan et al. (2026)
	EAT2	In my opinion, deploying ICT in smart tourism destinations is a reasonable and effective choice	
	EAT3	I believe that using ICT in smart tourism destinations brings many practical values and benefits to tourists	
	EAT4	The application of IT helps improve the quality of services at smart tourism destinations	Additional information from expert interviews (2025)
	EAT5	I support continued investment and development of IT at smart tourism destinations.	
Resource Efficiency Norms	REN1	I believe that smart tourism destinations adopt water-saving technologies, such as low-flow showerheads, to minimize water usage	Hasan et al. (2026)
	REN2	I believe that smart tourism destinations implement energy-efficient lighting solutions, including LED or CFL bulbs	
	REN3	I believe that smart tourism destinations apply effective insulation materials to buildings to reduce energy consumption for cooling	
STD Visit Intentions	STDI1	I intend to visit smart travel destinations in the near future	Hasan et al. (2026)
	STDI2	I am ready to choose smart travel destinations for my trip	
	STDI3	I will make an effort to arrange my plans so that I can visit smart travel destinations	
STD Visiting Behaviors	STDB1	I frequently visit smart tourism destinations	Hasan et al. (2026)
	STDB2	When traveling, I tend to choose and visit smart tourism destinations	
	STDB3	I often prioritize visiting tourist destinations that incorporate the features of smart tourism	

Data collection

The survey was conducted between August and October 2025 in Can Tho using a convenience sampling approach due to the difficulty of accessing the entire tourist population. According to Hair et al. (2022), convenience sampling is considered acceptable in exploratory and prediction-oriented studies employing Partial Least Squares Structural Equation Modeling (PLS-SEM), particularly when the target population cannot be comprehensively identified. Data were collected through face-to-face interviews to ensure respondents clearly understood the questionnaire items and to improve response validity. The survey participants consisted of tourists visiting representative smart tourism destinations in Can Tho, including Ninh Kieu Wharf, Cai Rang Floating Market, Son Islet, Truc Lam Phuong Nam Zen Monastery, and Binh Thuy Ancient House, which were selected because they represent prominent tourism attractions increasingly integrating digital technologies and smart tourism

practices. A total of 500 questionnaires were distributed, yielding 472 returned responses, corresponding to a response rate of 94.4%. After removing incomplete and unreliable questionnaires, 441 valid observations were retained for analysis, satisfying the recommended sample size requirements for PLS-SEM analysis (Hair et al., 2022). The demographic characteristics of respondents were measured using categorical variables and reported as percentages (%) representing the proportion of respondents within each category relative to the total valid sample (n=441). Regarding gender, male respondents accounted for 46.94% and female respondents accounted for 53.06%. Age was measured in years and classified into ordinal age groups, including under 20 years old (20.86%), from 20 to under 30 years old (40.82%), from 30 to under 40 years old (19.27%), and from 40 to under 50 years old (2.72%). Monthly income was measured in million Vietnamese Dong per month (million VND/month), with 16.33% earning less than 3 million VND, 28.34% earning from 3 to under 6 million VND, 42.86% earning from 6 to under 9 million VND, and 12.47% earning more than 9 million VND per month.

Information on the characteristics of the eligible study sample is presented briefly in Table 2. Overall, the sample structure indicates that young and middle-income tourists constitute the majority of respondents. This demographic profile is consistent with previous tourism technology studies suggesting that younger tourists are generally more familiar with digital technologies and more likely to engage with smart tourism services and technology-enabled travel experiences.

Table 2. The demographic survey data

Demographic profile		Frequency (n = 441)	Percent (%)
Gender	Male	207	46.94
	Female	234	53.06
Age	Under 20	92	20.86
	From 20 to under 30	180	40.82
	From 30 to under 40	85	19.27
	From 40 to under 50	72	16.33
	Above 50	12	2.72
Income	Under 3 mil VND/month	72	16.33
	From 3 to under 6 mil VND/month	125	28.34
	From 6 to under 9 mil VND/month	189	42.86
	Above 9 mil VND/month	55	12.47

RESULTS

In the initial stage, the measurement model was assessed and analyzed to confirm its quality before advancing to the second stage, which involved evaluating the structural model.

Measuring model

Table 3 demonstrates that all measurement items achieved convergent validity. The table includes Cronbach's Alpha values, average variance extracted (AVE) statistics for each dimension, and factor loadings for each item. With only rare exceptions, the results indicate that the outer loadings of the items were approximately 0.708 or higher, supporting the proposed factor structure (Hair et al., 2022). The AVE values range from 0.639 to 0.748, surpassing the recommended threshold of 0.50 (Hair et al., 2022). Additionally, the composite reliability (CR) and Cronbach's Alpha values, which ranged from 0.719 to 0.907, confirm construct reliability, exceeding the significance threshold of 0.7.

In this study, the heterotrait–monotrait (HTMT) criterion was applied to assess discriminant validity (Henseler et al., 2015). Discriminant validity is established when the square root of the AVE for each construct exceeds its correlations with other constructs. The results presented in Table 4 indicate that the square root of the AVE is higher than the correlations between all pairs of dimensions, confirming discriminant validity.

Table 3. Construct reliability and validity (Notes: CA: Cronbach's Alpha; CR: Composite Reliability, AVE: Average Variance Extracted; OL: Outer Loadings; EAT: e-Attitude; REN: Resource Efficiency Norms; STDI: STD Visit Intentions; STDB: STD Visiting Behaviors)

Construct	Code	CA	CR	AVE	OL
e-Attitude	EAT1	0.871	0.907	0.663	0.713
	EAT2				0.853
	EAT3				0.838
	EAT4				0.853
	EAT5				0.806
Resource Efficiency Norms	REN1	0.719	0.841	0.639	0.832
	REN2				0.753
	REN3				0.811
STD Visit Intentions	STDI1	0.802	0.883	0.715	0.849
	STDI2				0.825
	STDI3				0.863
STD Visiting Behaviors	STDB1	0.831	0.899	0.748	0.833
	STDB2				0.892
	STDB3				0.868

Table 4. Discriminant validity

Construct	Resource Efficiency Noms	STD Visit Intentions	STD Visiting Behaviors	e-Attitude
Resource Efficiency Noms	0.800			
STD Visit Intentions	0.342	0.846		
STD Visiting Behaviors	0.223	0.587	0.865	
e-Attitude	0.257	0.635	0.630	0.814

Structural model

The structural relationships among the constructs were examined using standardized path coefficients (β) and their associated p-values. As reported in Table 5 and Figure 2, both e-Attitude and Resource Efficiency Norms exhibited positive and statistically significant direct effects on STD Visit Intentions ($\beta = 0.586$, $p < 0.05$; $\beta = 0.191$, $p < 0.05$). The significance of these relationships is supported by t-values greater than 1.96 at the 5% significance level, in line with the criteria suggested by Henseler et al. (2009). Notably, e-Attitude emerged as the most influential predictor of STD Visit Intentions, indicating that favorable perceptions of smart technologies strongly enhance tourists' visit intention such destinations. Together, e-Attitude and Resource Efficiency Norms explained 43.8% of the variance in STD Visit Intentions ($R^2 = 0.438$), reflecting a moderate level of explanatory power for the proposed model.

Table 5. Hypothesis analysis results

Relationship	Path coefficients	P- values	Hypotheses	Decision
Direct effects				
EAT $\rightarrow$ STDI	0.586	0.000	H ₁	Accepted
REN $\rightarrow$ STDI	0.191	0.000	H ₂	Accepted
STDI $\rightarrow$ STDB	0.587	0.000	H ₃	Accepted
Indirect effects				
EAT $\rightarrow$ STDI $\rightarrow$ STDB	0.344	0.000	H ₄	Accepted
REN $\rightarrow$ STDI $\rightarrow$ STDB	0.112	0.000	H ₅	Accepted

Notes: EAT: e-Attitude; REN: Resource Efficiency Norms; STDI: STD Visit Intentions; STDB: STD Visiting Behaviors

Hypothesis H₂ posited that resource efficiency norms have a significant effect on tourists' visit intention smart tourism destinations. The results support this hypothesis ($\beta = 0.191$, $p = 0.000$), indicating that stronger resource efficiency norms are positively associated with higher visit intentions. In other words, tourists who are more conscious of efficient resource use are more inclined to visit smart tourism destinations. This finding is in line with previous research by Wang et al. (2018), which also identified a significant relationship between personal norms and visit intention in the smart tourism context.

Similarly, Hypothesis H₃ suggested that the visit intention smart tourism destinations significantly influences actual visiting behavior. The empirical evidence confirms this relationship ($\beta = 0.587$, $p = 0.000$), thereby supporting H₃. This result implies that stronger and more positive intentions increase the likelihood that tourists will engage in actual visiting behavior. The finding is consistent with the study conducted by Hasan and Aziz (2024), which likewise demonstrated that visit intention is a significant predictor of visiting behavior in smart tourism settings.

Collinearity Assessment (VIF): To assess potential multicollinearity issues among the predictor constructs, variance inflation factor (VIF) values were examined. The results indicate that all VIF values ranged from 1.357 to 2.462, which are well below the recommended threshold of 5.0 (Hair et al., 2022). This finding confirms that multicollinearity is not a concern in the structural model and that the predictor constructs are sufficiently distinct from one another. Furthermore, the full collinearity assessment revealed that all VIF values were below the more conservative threshold of 3.3, suggesting that common method bias (CMB) is unlikely to threaten the validity of the results (Kock, 2015). These findings support the robustness and reliability of the proposed model.

Effect Size (f^2): Effect size (f^2) was calculated to evaluate the relative impact of each exogenous construct on endogenous variables. Following Cohen (1988), f^2 values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects, respectively. The results indicate that e-attitude has a large effect on visit intention ($f^2 = 0.571$), suggesting that digital perceptions represent the most influential determinant of tourists' intention to visit smart tourism destinations. In contrast, resource efficiency norms demonstrate a small effect on visit intention ($f^2 = 0.061$), indicating a relatively weaker but still meaningful contribution. Furthermore, visit intention exerts a large effect on actual visiting behavior ($f^2 = 0.526$), confirming the strong predictive role of intention in shaping tourists' actual behavior toward smart tourism destinations. These findings indicate that e-attitude is the dominant predictor of visit intention.

Predictive Relevance (Q^2): Predictive Relevance (Q^2): The predictive relevance of the model was assessed using the blindfolding procedure. According to Hair et al. (2022), Q^2 values greater than zero indicate that the model has predictive relevance for endogenous constructs. The results show that the Q^2 values for visit intention $Q^2 = 0.305$ and actual behavior $Q^2 = 0.254$ are above zero, confirming that the proposed model possesses satisfactory predictive capability.

Model Fit (SRMR): The overall model fit was assessed using the standardized root mean square residual (SRMR). The results show that the SRMR value is 0.070, which is below the recommended threshold of 0.08 suggested by Henseler et al. (2015). This indicates that the proposed model demonstrates an acceptable level of fit and that the discrepancy between the

observed and predicted correlations is relatively small. Therefore, the structural model can be considered well-fitted to the empirical data, supporting the adequacy and robustness of the proposed framework.

Mediating effects

Beyond their direct effects on STD Visit Intentions, the results reported in Table 5 and Figure 2 also indicate the presence of significant indirect relationships. Specifically, e-Attitude has a positive and statistically significant indirect effect on STD Visiting Behaviors through STD Visit Intentions ($\beta = 0.344$, $p < 0.001$). Similarly, Resource Efficiency Norms indirectly influence STD Visiting Behaviors via STD Visit Intentions ($\beta = 0.112$, $p < 0.001$).

These findings suggest that STD Visit Intentions serve as a mediating variable, transmitting the effects of both e-Attitude and Resource Efficiency Norms onto actual visiting behavior. Thus, tourists' favorable attitudes toward smart tourism technologies and their resource efficiency norms contribute to visiting behavior primarily by strengthening their visit intention smart tourism destinations.

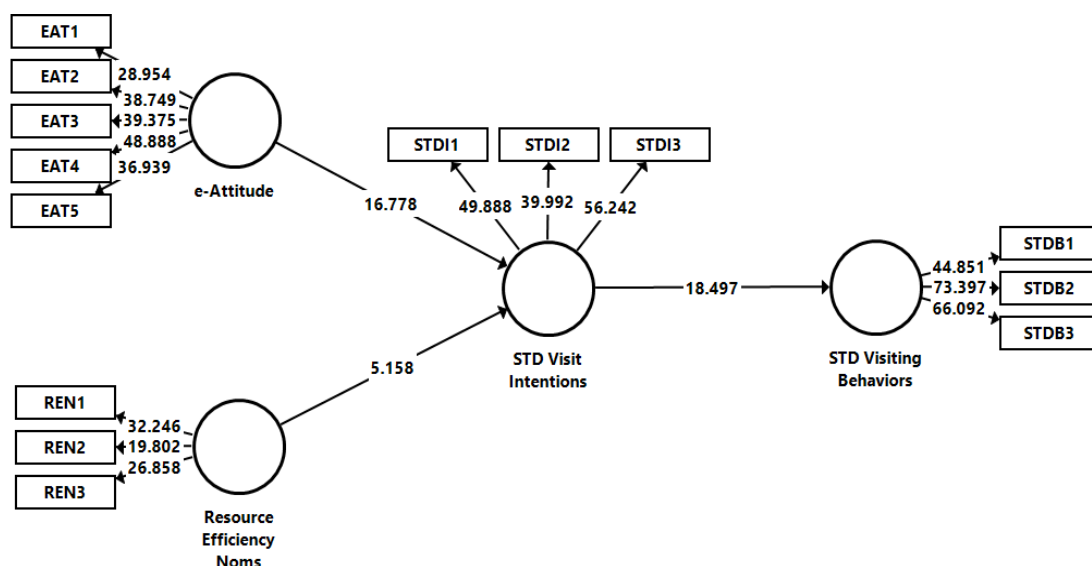


Figure 2. Structural model result

DISCUSSION

This study aims to explain tourists' visiting behavior toward smart tourism destinations (STD) by extending the Theory of Planned Behavior (TPB) with digital and sustainability-related constructs. The findings provide several important theoretical and practical insights.

First, the results demonstrate that e-attitude has a significant and positive effect on visit intention, with the strongest explanatory power among the antecedents. This finding suggests that tourists' evaluations of digital technologies play a central role in shaping behavioral intentions in smart tourism contexts. Unlike traditional tourism settings, where attitudes are formed primarily through offline experiences, smart tourism environments rely heavily on digital interfaces such as mobile applications, online platforms, and real-time information systems. As a result, e-attitude becomes a critical determinant of decision-making. This finding extends TPB by showing that attitude formation in the digital era is increasingly mediated by technology-based interactions rather than purely cognitive evaluations. It is consistent with prior studies highlighting the importance of digital engagement in influencing tourism behavior, but it further emphasizes that such influence operates as a core psychological mechanism rather than a peripheral factor.

Second, the results indicate that resource efficiency norms significantly influence visit intention, highlighting the role of sustainability-oriented social expectations in shaping tourist behavior. This finding supports the extension of subjective norms in TPB by incorporating environmental and resource-related considerations. In the context of smart tourism, where digital systems often promote efficient resource use and sustainable practices, tourists appear to internalize these norms and incorporate them into their decision-making processes. Compared to earlier studies that focus primarily on pro-environmental attitudes, this result suggests that socially embedded expectations regarding sustainability may exert a more structured influence on intention formation. This contributes to the literature by integrating sustainability norms into behavioral models of smart tourism.

Third, the study confirms that visit intention significantly predicts actual visiting behavior, consistent with the core assumption of TPB. This finding reinforces the robustness of intention as a key determinant of behavior, even in digitally mediated environments. Importantly, it suggests that despite the increasing complexity of tourism decision-making, the intention-behavior link remains valid when extended with context-specific constructs. This supports the continued relevance of TPB as a foundational framework while highlighting the need for contextual adaptation.

Fourth, the mediating analysis reveals that visit intention plays a crucial mediating role in linking both e-attitude and resource efficiency norms to actual behavior. This finding provides empirical support for the mechanism proposed in the extended framework, demonstrating that psychological factors influence behavior indirectly through intention.

More importantly, it highlights that both digital perceptions and sustainability norms are not directly translated into behavior but are filtered through a deliberate decision-making process. This insight contributes to a more nuanced understanding of how different types of antecedents operate within the behavioral process in smart tourism contexts.

From a theoretical perspective, this study makes several contributions. First, it extends TPB by integrating digital-era constructs (e-attitude) and sustainability-oriented norms (resource efficiency norms), thereby enhancing its explanatory power in the context of smart tourism. Second, it bridges previously fragmented research streams by combining technology-driven perspectives with behavioral and sustainability-oriented approaches. Third, it provides empirical evidence from an emerging tourism destination, contributing to the diversification of research contexts in the smart tourism literature.

From a practical perspective, the findings suggest that destination managers should prioritize digital experience design to enhance tourists' e-attitude. Investments in user-friendly mobile applications, real-time information systems, and interactive platforms can significantly influence tourists' visit intention.

In addition, policymakers should promote sustainability-oriented communication strategies that reinforce resource efficiency norms, thereby encouraging responsible tourism behavior. Integrating digital innovation with sustainability messaging may create synergistic effects in attracting tourists to smart destinations.

Overall, the study highlights that tourist behavior in smart tourism contexts is jointly shaped by digital perceptions and sustainability considerations, mediated through behavioral intention. This underscores the importance of adopting an integrated approach that combines technological advancement with environmental responsibility in both research and practice.

The findings of this study are broadly consistent with, yet extend, existing research on smart tourism behavior. First, the significant effect of e-attitude on visit intention aligns with prior studies that emphasize the role of digital engagement and technology acceptance in shaping tourist decisions (Jeong & Shin, 2019; Ghosh & Mukherjee, 2023). While earlier research often treats technology-related factors as external drivers of behavior, this study advances the literature by conceptualizing e-attitude as a core psychological construct within an extended behavioral framework. This suggests that digital perceptions are not merely contextual influences but are internalized as part of tourists' evaluative processes.

Second, the positive impact of resource efficiency norms on visit intention is consistent with studies on pro-environmental behavior in tourism (Han et al., 2010; Juvan & Dolnicar, 2014), which highlight the importance of social and moral norms in influencing decision-making. However, this study extends prior work by focusing specifically on resource efficiency within smart tourism contexts, where sustainability is often embedded in digital systems and destination management strategies. This indicates that sustainability-related norms may operate more explicitly and systematically in smart tourism environments compared to traditional tourism settings.

Third, the strong relationship between visit intention and actual behavior confirms the foundational assumptions of the Theory of Planned Behavior (Ajzen, 1991) and is consistent with empirical findings in tourism research (Lam & Hsu, 2006; Sun et al., 2020). Importantly, the present study demonstrates that this relationship remains robust even when the model is extended to include digital and sustainability constructs, thereby supporting the adaptability of TPB in contemporary tourism contexts. Finally, the mediating role of visit intention is in line with prior studies that identify intention as a key mechanism linking psychological factors and behavior (Han et al., 2010; Sun et al., 2020). However, this study contributes further by showing that both digital perceptions (e-attitude) and sustainability norms (resource efficiency norms) operate through this mediating pathway. This provides a more integrated understanding of how diverse antecedents jointly influence tourist behavior in smart tourism destinations.

Overall, while the findings are generally consistent with existing literature, they extend prior research by integrating digital and sustainability perspectives into a unified behavioral framework, thereby offering new insights into tourist decision-making in the era of smart tourism.

CONCLUSION AND LIMITATIONS

This study investigates tourists' visiting behavior toward STD by extending the TPB with digital and sustainability-related constructs. Specifically, the study examines the roles of e-attitude and resource efficiency norms in shaping visit intention and subsequent actual behavior within an emerging smart tourism context.

The findings reveal that both e-attitude and resource efficiency norms significantly influence tourists' visit intention toward STD, with e-attitude emerging as the strongest predictor. In turn, visit intention plays a central role in translating these psychological factors into actual visiting behavior. The mediating analysis further confirms that intention serves as a key mechanism linking digital perceptions and sustainability norms to behavior. These results highlight the importance of integrating both technological and environmental considerations in understanding tourist decision-making.

From a theoretical perspective, this study contributes to the literature in several ways. First, it extends TPB by incorporating e-attitude and resource efficiency norms, thereby enhancing its explanatory power in digitally mediated and sustainability-oriented contexts. Second, it bridges previously fragmented research streams by integrating technology-driven and sustainability perspectives into a unified behavioral framework. Third, by providing empirical evidence from an emerging smart tourism destination, the study broadens the geographical and contextual scope of existing research.

From a practical perspective, the findings suggest that destination managers should focus on enhancing tourists' digital experiences to foster positive e-attitudes. Investments in user-friendly digital platforms, real-time information systems, and interactive services can significantly increase tourists' visit intention.

In addition, policymakers should promote sustainability-oriented initiatives and communication strategies that reinforce resource efficiency norms, thereby encouraging responsible tourism behavior. The integration of digital innovation and sustainability practices can create a competitive advantage for smart tourism destinations.

Despite these contributions, the study has several limitations. The use of convenience sampling may limit the generalizability of the findings, and the focus on a single destination context may restrict external validity. Furthermore, the study considers a limited set of constructs, and future research is encouraged to incorporate additional variables, such as perceived behavioral control, trust in technology, and perceived risk. Longitudinal and comparative studies across different destinations would also provide deeper insights into the dynamics of tourist behavior in smart tourism environments.

In conclusion, this study demonstrates that tourist behavior in smart tourism destinations is shaped by the combined influence of digital perceptions and sustainability-oriented norms, mediated through behavioral intention. By adopting an integrated theoretical approach, the study provides a more comprehensive understanding of tourist decision-making in the digital era and offers valuable implications for both research and practice.

Author Contributions: Conceptualization, Y.I. and Y.E.A.; methodology, Y.I. and L.D.D.; software, Y.I. and B.B.; validation, Y.I. and L.D.D. and B.A.; formal analysis, Y.I. and Y.E.A. and A.A.; investigation, Y.I. and L.D.D. and G.K.; data curation, Y.E.A. and L.D.D. and S.A. and Y.I.; writing - original draft preparation, Y.I. and B.B.; writing - review and editing, Y.E.A. and B.B. and Z.T. and B.A. and A.Z.; visualization, A.A. and G.K. and S.A. and Y.E.A. and B.B.; supervision, Y.I. and Y.E.A. and Z.T. and B.B.; project administration, Y.I. and L.D.D. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding

Institutional Review Board Statement: This confirmation is documented in the Research Ethics Review Confirmation, Ref. No. 83/XN-KTL, issued on September 4, 2026.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data presented in this study may be obtained on request from the corresponding author.

Acknowledgements: The research undertaken was made possible by the equal scientific involvement of all the authors Concerned.

Conflicts of Interest: The authors declare no conflict of interest

Use of Generative AI: Not applicable.

REFERENCES

- Yap, Y. Y., Tan, S. H., Tan, B. C., & Tan, S. K. (2025). Smart tourism technologies and tourist satisfaction: A systematic literature review and research agenda. *Acta Psychologica*, 258, 105191. <https://doi.org/10.1016/j.actpsy.2025.105191>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Berhe, A. A., Aregay, A. D., Abreha, A. A., Aregay, A. B., Gebretsadik, A. W., Negash, D. Z., Gebreegziabher, E. G., Demoz, K. G., Fenta, K. A., & Mamo, N. B. (2020). Knowledge, attitude, and practices on water, sanitation, and hygiene among rural residents in Tigray Region, Northern Ethiopia. *Journal of Environmental and Public Health*, 2020(1), 1–9. <https://doi.org/10.1155/2020/5460168>
- Buhalis, D., Amaranggana, A. (2015). Smart Tourism Destinations Enhancing Tourism Experience Through Personalisation of Services. In: Tussyadiah, I., Inversini, A. (eds) *Information and Communication Technologies in Tourism 2015*, 377–389, Springer, Cham, Germany. https://doi.org/10.1007/978-3-319-14343-9_28
- Cavalheiro, M. B., Joia, L. A., & Cavalheiro, G. M. do C. (2020). Towards a smart tourism destination development model: Promoting environmental, economic, socio-cultural and political values. *Tourism Planning & Development*, 17(3), 237–259. <https://doi.org/10.1080/21568316.2019.1597763>
- Czyz, M., & Javed, M. (2025). Revolutionizing travel: The role of smart tourism technologies in enhancing tourist satisfaction and shaping sustainable destination images: Insights from Istanbul. *Geojournal of Tourism and Geosites*, 58(1), 446–455. <https://doi.org/10.30892/gtg.58141-1426>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates, Routledge, New York.
- Dabeedooal, Y. J., Dindoyal, V., Allam, Z., & Jones, D. S. (2019). Smart tourism as a pillar for sustainable urban development: An alternate smart city strategy from Mauritius. *Smart Cities*, 2(2), 153–162. <https://doi.org/10.3390/smartcities2020011>
- Farrow, K., Grolleau, G., & Ibanez, L. (2017). Social norms and pro-environmental behavior: A review of the evidence. *Ecological Economics*, 140, 1–13. <https://doi.org/10.1016/j.ecolecon.2017.04.017>
- Ghosh, P., & Mukherjee, S. (2023). Understanding tourist behaviour towards destination selection based on social media information: An evaluation using unsupervised clustering algorithms. *Journal of Hospitality and Tourism Insights*, 6(2), 754–778. <https://doi.org/10.1108/JHTI-11-2021-0317>
- Godey, B., Manthiou, A., Pederzoli, D., Rokka, J., Aiello, G., Donvito, R., & Singh, R. (2016). Social media marketing efforts of luxury brands: Influence on brand equity and consumer behavior. *Journal of Business Research*, 69(12), 5833–5841.
- Gretzel, U., Sigala, M., Xiang, Z., & Koo, C. (2015). Smart tourism: Foundations and developments. *Electronic Markets*, 25(3), 179–188. <https://doi.org/10.1007/s12525-015-0196-8>
- Hair, J., & Alamer, A. (2022). Partial least squares structural equation modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics*, 1(3), 100027. <https://doi.org/10.1016/j.rmal.2022.100027>
- Han, H., Hsu, L.-T. J., & Sheu, C. (2010). Application of the theory of planned behavior to green hotel choice: Testing the effect of environmental friendly activities. *Tourism Management*, 31(3), 325–334. <https://doi.org/10.1016/j.tourman.2009.03.013>

- Hasan, A. A.-T. (2022a). Determinants of intentions to use the Foodpanda mobile application in Bangladesh: The role of attitude and fear of COVID-19. *South Asian Journal of Marketing*, 4(1), 17–32. <https://doi.org/10.1108/SAJM-10-2021-0123>
- Hasan, A. A.-T. (2022b). Technology attachment, e-attitude, perceived value, and behavioral intentions towards Uber ridesharing services: The role of hedonic, utilitarian, epistemic, and symbolic value. *Journal of Contemporary Marketing Science*, 5(3), 239–265. <https://doi.org/10.1108/JCMARS-01-2022-0002>
- Hasan, A. A.-T., & Aziz, R. (2024). Theory of environmentally responsible behavior (TERB) to predict waste reduction behaviors among young coastal tourists: A case of Bangladesh. *European Business Review*, 36(6), 899–917. <https://doi.org/10.1108/EBR-10-2023-0317>
- Hasan, A. A.-T., & Rahman, M. T. (2023). Factors influencing green hotel revisit intentions after COVID-19 in Bangladesh. *International Journal of Tourism Cities*, 9(1), 143–158. <https://doi.org/10.1108/IJTC-03-2022-0065>
- Hasan, A. A., Rahman, M. M., & Gani, M. O. (2026). Exploring factors influencing smart tourism destination visiting behaviors in a historic country: A theory of e-consumption behavior. *European Journal of Management and Business Economics*, 35(3), 361–378. <https://doi.org/10.1108/EJMBE-03-2024-0081>
- Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. *Advances in International Marketing*, 20, 277–319. [https://doi.org/10.1108/S1474-7979\(2009\)0000020014](https://doi.org/10.1108/S1474-7979(2009)0000020014)
- Inmor, S., Na-Nan, K., Phanniphong, K., Jaturat, N., & Kůstka, M. (2025). The role of smart green tourism technologies in shaping tourist intentions: Balancing authenticity and sustainability in natural tourism. *Environmental Challenges*, 19, 101171. <https://doi.org/10.1016/j.envc.2025.101171>
- Jeong, M., & Shin, H. H. (2019). Tourists' experiences with smart tourism technology at smart destinations and their behavioral intentions. *Journal of Travel Research*, 59(8), 1464–1477. <https://doi.org/10.1177/0047287519883034>
- Juvan, E., & Dolnicar, S. (2014). The attitude–behaviour gap in sustainable tourism. *Annals of Tourism Research*, 48, 76–95. <https://doi.org/10.1016/j.annals.2014.05.012>
- Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration*, 11(4), 1–10. <https://doi.org/10.4018/ijec.2015100101>
- Lam, T., & Hsu, C. H. C. (2006). Predicting behavioral intention of choosing a travel destination. *Tourism Management*, 27(4), 589–599. <https://doi.org/10.1016/j.tourman.2005.02.003>
- Mandić, A., & Kennell, J. (2021). Smart governance for heritage tourism destinations: Contextual factors and destination management organization perspectives. *Tourism Management Perspectives*, 39, 100862. <https://doi.org/10.1016/j.tmp.2021.100862>
- Marinac, A., Budić, H., & Ergović, A. (2025). Spatial conditionality of tourism supply with a focus on smart destinations: The case of Croatia and the European perspective. *Geojournal of Tourism and Geosites*, 61(3), 1952–1958. <https://doi.org/10.30892/gtg.61352-1562>
- Novianti, S., Susanto, E., & Rafdinal, W. (2022). Predicting tourists' behaviour towards smart tourism: The case in emerging smart destinations. *Journal of Tourism Sustainability*, 2(1), 19–30.
- Qiao, Y., Chen, Y., Wang, J., Liu, Z., & Shao, Z. (2026). The impact of smart tourism technologies on senior tourists' perceptions of equity and memorable experiences. *Journal of Hospitality and Tourism Management*, 66, 101415. <https://doi.org/10.1016/j.jhtm.2026.101415>
- Schwartz, S. H. (1977). Normative influences on altruism. *Advances in experimental social psychology*, 10, 221–279. [https://doi.org/10.1016/S0065-2601\(08\)60358-5](https://doi.org/10.1016/S0065-2601(08)60358-5)
- Singh, S., Lee, S., & Tsai, K. (2025). The impact of smart tourism technologies on engagement, experiences, and place attachment: A focused study with gamification as the moderator. *Journal of Destination Marketing & Management*, 36, 100997. <https://doi.org/10.1016/j.jdmm.2025.100997>
- Sun, S., Law, R., & Schuckert, M. (2020). Mediating effects of attitude, subjective norms and perceived behavioural control for mobile payment-based hotel reservations. *International Journal of Hospitality Management*, 84, 102331. <https://doi.org/10.1016/j.ijhm.2019.102331>
- Torabi, Z.-A., Shalbfian, A. A., Allam, Z., Ghaderi, Z., Murgante, B., & Khavarian-Garmsir, A. R. (2022). Enhancing memorable experiences, tourist satisfaction, and revisit intention through smart tourism technologies. *Sustainability*, 14(5), 2721. <https://doi.org/10.3390/su14052721>
- Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1), 157–178. <https://doi.org/10.2307/41410412>
- Wang, Z., Guo, D., Wang, X., Zhang, B., & Wang, B. (2018). How does information publicity influence residents' behavioral intentions around e-waste recycling? *Resources, Conservation and Recycling*, 133, 1–9. <https://doi.org/10.1016/j.resconrec.2018.01.014>