



Domestic Tourists' Perception and Attitude Towards Circularity in Egypt

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Abstract

This study aims to fill a critical gap in the field of circular tourism by investigating the perceptions and attitudes towards circularity among domestic tourists in Egypt, a developing country. The purpose is to provide insights into the preferences and behaviours of this demographic, addressing a lack of research in this context.

Structured surveys were conducted among a randomly selected sample of 397 diverse domestic tourists. A quantitative approach, employing SmartPLS 4 for data analysis, was used to examine the relationships between environmental consciousness, demographic factors, and attitudes toward tourism circularity. This robust methodology ensures the reliability and validity of the study's findings.

Findings reveal that around 56% of Egyptian domestic tourists exhibit high environmental awareness, with 26.9% lacking it. In terms of attitudes towards circularity, 44.6% express positivity, while 45.8% show negativity, indicating a potential misalignment between environmental awareness and attitudes towards circular practices. Positive relationships were identified between environmental consciousness and overall attitudes toward tourism circularity. Additionally, the study uncovers the mediating role of environmental consciousness in demographic influences and highlights the moderating effect of gender on the relationship between environmental consciousness and overall attitudes.

This study contributes original insights by focusing on domestic tourists in a developing country, enriching the understanding of circular tourism. The study adds value to the literature by providing empirical evidence and insights for fostering sustainability in the Egyptian tourism sector. The study implications extend to actionable strategies for stakeholders, emphasising the importance of targeted interventions aligned with local preferences, thus fostering sustainability in the Egyptian tourism landscape.

Keywords: Domestic tourism, Attitude, Circular economy, Circularity, Developing countries, SDG12, Sustainability, Egypt.

1. Introduction

Sorin and Einarsson (2020) highlight various long-term trends impacting the travel industry, including a rising demand for domestic travel post-COVID-19. Another crucial trend is the

growing sustainability awareness, fueled by global issues like plastic waste, the climate crisis, and climate strikes, which has become a pivotal buying factor for Generation Z and emerging consumer demographics.

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Today's numerous environmental challenges have increased the voices calling for protecting the environment and implementing sustainable and responsible strategies, which are no longer a luxury (Martínez-Cabrera and López-del-Pino, 2021). The tourism sector is not an exception and will be affected by the global mega-trends (e.g., growing natural resource prices and scarcity; political commitment to solve the climate change problem) that appear to be pushing the existing linear regime to be more circular, sustainable, and green (Manniche et al., 2020). The tourism industry significantly impacts the environment, being identified as the third-largest contributor to global CO₂ emissions (Migale, Stimie, & Brent, 2019). The current linear economic model of tourism exacerbates ecological issues such as escalating energy demand, substantial waste generation, excessive water consumption, unregulated wastewater discharges, and a rise in global greenhouse gas emissions (Economic Commission for Europe, 2022; Martins, 2021; Rodríguez et al., 2020; Rodríguez-Antón and Alonso-Almeida, 2019). Moreover, the adverse effects of tourism are exacerbated when concentrated in a single season, such as winter or summer (Economic Commission for Europe, 2022). Thus, tourism must expedite its shift towards a circular economic model, minimising its consumption footprint, enhancing material circularity, and contributing more to the planet than it extracts. However, tourism has tremendous potential to evolve into a circular business model as it is one of the economies that is growing the fastest. Circular economy (CE) in tourism can reduce economic leakages, reduce waste generation and climate change, foster innovation, build sustainable businesses, and create green jobs (Dawadi, 2022).

To execute CE strategies in any destination, all key players (e.g., destination management organisations (DMOs), tourism businesses, locals, and visitors) must collaborate (Florido et al., 2019). Robaina (2022) emphasised the pivotal role of tourists' attitudes and behaviours, specifically their engagement in green,

sustainable, and circular practices, for the successful transition to a circular economy in tourism. Without tourists adopting circular behaviours, destination efforts may prove ineffective (Robaina, 2022). Therefore, it is crucial to raise awareness among tourists about the impact of their consumption choices at destinations (Giurea et al., 2018). However, in developing nations, environmental awareness has grown slowly, and despite increasing awareness among travellers, their actions do not align with these concerns, creating an attitude-behaviour gap (Budovska et al., 2019; Rafiq et al., 2022).

In Egypt, awareness of the circular economy is low but rising quickly, fueled by an environmentally conscious youth and media influence. According to Karam (2020), Egyptians often associate the circular economy solely with clean energy, water, and waste management, lacking broader awareness. The demand for eco-friendly products and services remains modest, potentially constituting less than 5% of the overall market (Karam, 2020).

The hospitality and air travel sectors, criticised for inadequate responses to environmental concerns, can address issues by promoting local and domestic tourism, according to Manniche et al. (2020). Recommendations include shorter travel distances, longer stays, and eco-friendly transportation. And in Egypt, domestic tourism has gained significance amid declining international arrivals attributed to political unrest since 2011 and the COVID-19 pandemic (Briez, Abd Eljalil, & Ezzat, 2021).

Domestic tourism, comprising 86% of total global tourism, is often neglected and undervalued compared to international tourism (Melese, 2022). Additionally, the circular economy (CE) in tourism remains underexplored (Dawadi, 2022). Hence, this study aims to fill gaps in the literature by addressing both circular tourism and domestic tourism.

Sorin and Einarsson (2020) highlight the scarcity of research on the Circular Economy's

(CE) relevance in the tourism industry, despite tourism being a major global sector. Robaina (2022) notes the limited attention given to circularity in tourism thus far. Jones and Wynn (2019) call for future research on consumers' perceptions of the circular economy's impact on tourism and hospitality. Understanding tourists' attitudes is crucial for service providers considering CE adoption. Sorensen and Bærenholdt (2020) emphasise the need to shift the discourse from a supply-side to a demand-side perspective, acknowledging tourists' behaviour as pivotal in shaping the tourism industry.

Moreover, although tourists' attitudes are a highly discussed topic within tourism studies, the attitudes of domestic tourists towards tourism circularity have not yet been investigated. An online search by the author within two leading bibliographic databases (Scopus and Web of Science) took place to support this.

Driven by the previous introduction and in addition to some previous studies' recommendations for future research (e.g., Sorin and Einarsson, 2020), this research is intended to fill a crucial gap by investigating the following questions:

(RQ1) Are domestic tourists in Egypt environmentally conscious?

(RQ2) What is the nature and strength of the relationship between domestic tourists' environmental consciousness, age, and educational level and their overall attitude towards tourism circularity?

(RQ3) Does the domestic tourists' gender influence their overall attitude towards tourism circularity?

2. Literature review and hypothesis development

2.1 Conceptual demand-side perspectives of the circularity in tourism

Dawadi (2022) highlighted that over 91% of resources extracted from the earth are wasted.

Concepts like sustainable development and green growth emerged in the last three decades to address global issues tied to the current growth-focused production and consumption model, including resource scarcity, climate change, and pollution. While Circular Economy (CE) shares similarities with these ideas, it offers distinctive and practically actionable guidelines (Martins, 2021). The CE emphasises value creation through resource restoration, regeneration, and reuse, facilitated by innovative business models and consumption practices that prioritise active 'users' over passive 'consumers' (Manniche et al., 2020). Kirchherr, Reike, and Hekkert (2017) synthesised over 100 definitions of the circular economy, proposing it as an economic system that shifts from the "end-of-life" concept to prioritising the reduction, reuse, recycling, and recovery of materials in production, distribution, and consumption. Emphasising "zero waste and emissions" and designing for waste reduction, the Economic Commission for Europe (2022) provides the most widely accepted definition: "an economic system that maximises added value in products and minimises waste."

In the tourism and hospitality research literature, there's growing interest in Circular Economy (CE) concepts (Marchese et al., 2018). However, academic discussions on CE in the tourism sector are limited (Pattanaro and Gente, 2017; Martins, 2021). Some studies explore the general challenges of incorporating CE in tourism, while others examine specific tourist areas and activities (Pattanaro and Gente, 2017). Dawadi (2022) argues that developing the Circular Economy (CE) in tourism can enhance sustainability by optimising natural resource use, improving industry efficiency, and fostering tourism's effective contribution to sustainable development. Zhang and Dong (2015) identified challenges in implementing a CE model for Mount Emei Scenic Area in China, including a lack of understanding, tourist pressure, and low resource recycling rates. They proposed a tourism CE model involving increased government involvement, green

procurement by accommodation and catering companies, waste management, energy-saving initiatives, and environmentally friendly tour routes. In the tourism and hospitality sectors, Jones and Wynn (2019) highlight the growing recognition of water and waste management, along with energy monitoring, as crucial components of a sustainable management strategy.

Sorin and Einarsson (2020) argue that embracing a circular economy (CE) in tourism fosters resilience and sustainability. They highlight the industry's interdependence with key resource flows and value chains, such as agriculture, food, the built environment, and transport. The authors suggest that travel and tourism stakeholders can drive circular practices, leading to shared value creation within relevant chains (Sorin and Einarsson, 2020). Accordingly, Dawadi (2022) defined circular tourism as a tourism industry able, through its various activities and components, to offer a circular business model in which goods and services are produced and consumed without wasting any of the planet's finite resources, including energy, water, and raw materials.

Recently, there have been significant steps in promoting circular tourism. The Balearic Islands' government introduced urgent measures (Decree Law 3/2022) prohibiting new tourist accommodations and mandating hotel companies adopt a Circular Economy (CE) action plan. Additionally, the United Nations Economic Commission for Europe (UNECE) launched a policy dialogue platform on April 6, 2022, uniting 56 member states to facilitate the transition to a circular economy in tourism and support Sustainable Development Goal 12 on responsible consumption and production. The platform aims to foster dialogue, share best practices, and involve stakeholders in developing CE roadmaps for tourism (unece.org, 2022).

While discussions on the circular economy (CE) often emphasise production-side transitions, it's crucial to recognise that the process occurs within a societal framework,

impacting both production and consumption practices (Manniche et al., 2020). Additionally, a growing influx of tourists engaging in unsustainable consumption habits contributes to increased solid waste, straining local waste management systems and conflicting with the principles of the circular economy (Dawadi, 2022). Tourist education is a crucial challenge in the shift to a circular tourism model. While supply-side pressures are valuable, tourists play an active role in co-producing, co-performing, and co-creating their experiences. They select and combine tourism elements, interact with local resources, and contribute to the behavioural changes needed for circular tourism. Thus, awareness among consumers is key for this transition (Economic Commission for Europe, 2022; Sorensen and Bærenholdt, 2020; Aryal, 2020).

Transitioning to a circular economy (CE) may initially worry tourism operators due to the costs of adopting new technologies and practices (Martins, 2021). However, embracing these changes can not only benefit the environment but also lead to long-term cost reduction and enhanced competitive advantage (Al-Aomar and Hussain, 2017). With a growing consumer focus on sustainable living, tourism operators are compelled to align with this market trend (Osti and Goffi, 2021). According to Kularatne et al. (2019), 90% of guests prioritise hotels with green initiatives, emphasising the importance of sustainable practices in the hospitality industry.

2.2 The urgent need for the CE and its applicability within domestic tourism in Egypt

Egypt, the most populous country in the Arab world and a major economy, is tackling challenges in food, energy, and water due to increasing demand (Bohl et al., 2018). It's among the top three most water-stressed nations in the southern and eastern Mediterranean, facing issues like dwindling groundwater and dependence on rain-fed agriculture (EBRD, 2022). To address this, Egypt is committed to sustainable growth through reforms and investments, including green bonds, solar projects, and desalination

(EBRD, 2022). The government is implementing ambitious changes, building on a successful IMF-supported programme and the Egypt Vision 2030 initiative (EBRD, 2022).

In alignment with the government's reform efforts towards more sustainable use of resources, adopting the concept of CE in tourism can be of great value. Moreover, grabbing the attention of key actors, like domestic tourists, to participate in and support this cause will be of added value. Domestic tourism, defined as residents travelling within their own country, plays a crucial role in the global tourism sector. It mitigates regional seasonality and directs visitors to less-explored rural areas, often neglected by foreign tourists (Choo, 2015; WTTC, 2018). Despite not generating foreign revenue, domestic tourism substantially contributes to local economic development. Local businesses benefit as domestic tourists prefer locally produced goods and services at more affordable prices, supporting small-scale enterprises and the informal sector (Choo, 2015; WTTC, 2018).

Domestic tourism is crucial for Egypt, especially considering Africa's substantial untapped tourism potential. The continent's underdeveloped tourism sector attracts only 6.0% of global tourist arrivals and commands a mere 3% share of worldwide tourism receipts (Melese, 2022). Egypt has garnered attention for its domestic tourism, notably in the wake of a significant decline in international tourist arrivals since 2011 (Mohammad and Ammar, 2017).

Despite Egypt's historical significance, inbound tourism remains relatively small. According to WTTC (2022), domestic tourism significantly contributes, with 11.1 billion USD to Egypt's GDP, surpassing the 6.9 billion USD from international tourism. Surprisingly, prior research indicates that managers of hospitality enterprises in Egypt tend to prioritise serving foreigners over domestic tourists, citing negative attitudes and behaviour among local tourists as a key factor (Mohammad and Ammar, 2017; Mohamed and Atef, 2018).

In 2015, Egypt recorded over 6.04 million domestic trips for holidays, leisure, and recreation (Statista, 2019). Despite its importance, there is a lack of recent and comprehensive data on domestic tourism in Egypt. This is due to its limited attention in academic and governmental research, resulting in the absence of a global database for such statistics (Ragab et al., 2020).

Melese (2022) highlights the challenge of obtaining reliable data on domestic tourism due to the lack of standard measurement systems. However, in developing market economies like Egypt, common motivations for domestic travel include pilgrimages, visiting friends and relatives, business travel, health tourism, and leisure travel (Melese, 2022). Briez et al. (2021) report that a substantial majority (89.8%) of domestic tourists in Egypt travel for leisure, particularly during vacations.

The Economic Commission for Europe (2022) outlined six key tourist experience activities to which the CE principles could be applied, leading to a more circular tourism industry (Table 1). It is worth noting that domestic tourism, by nature, includes and supports all of these activities, unlike international tourism (see Table 1).

2.3 Tourists' Demographics and Attitudes Towards Circularity

Recently, Social Exchange Theory (SET) has been used to examine community attitudes and behaviours related to tourism (Nunkoo et al., 2013). According to SET, residents tend to be positive about tourism when they perceive more benefits, including economic, socio-cultural, and environmental factors (Peters et al., 2018). Hockenbury and Hockenbury (2011) suggested that attitudes commonly directly affect behaviour. Following the Theory of Reasoned Action (TRA), attitudes influence behavioural intent, impacting actions (Peters et al., 2018). Success in destination management relies on the attitudinal dynamism of locals (Peters et al., 2018). An attitude is defined as a predisposition to respond positively or negatively to an idea, object, person, or

situation, shaping reactions to stimuli (Peters et al., 2018).

H1. There is a positive direct relationship between domestic tourists' environmental consciousness (ENC) and their overall attitude

Table 1- the six key tourist experience activities matching CE principles

Activity	CE principle	CE practices
1. Pre-travel (The planning of the journey)	Reduce by design	<ul style="list-style-type: none"> Choose nearby tourism destinations to significantly reduce CO2 emissions. Opt for fewer but longer stays to minimise the need for additional travel. Traveling off-season helps ecosystems recover by reducing tourist numbers and enabling them to absorb more of the environmental burden from tourism. Tourists can choose eco-friendly options like "slow tourism" (walking, camper van, cycling) to minimize environmental impact.
2. Travel	Reduce	<ul style="list-style-type: none"> Choosing eco-friendly transportation (e.g., train, bus)
	Reuse	<ul style="list-style-type: none"> Using ride-sharing platforms (e.g., Uber) to minimise unused travel capacity.
3. Internal transfer (At the destination)	Reduce	<ul style="list-style-type: none"> Opt for energy-efficient engines.
	Reduce by design	<ul style="list-style-type: none"> Choosing electric over traditional cars.
	Reuse	<ul style="list-style-type: none"> Utilise ride-sharing platforms for transportation, akin to the approach taken for travel.
4. Accommodation	Reduce by design	<ul style="list-style-type: none"> Using accommodation sharing platforms (like EcoBnB, HomeExchange, GoMore, etc.) Choose eco-friendly hotels with higher circular standards (e.g., utilising ReFood recycling solutions or solar panels for energy).
	Reduce	<ul style="list-style-type: none"> Tourists practicing eco-friendly habits in accommodations, like saving water, turning off lights, recycling, and choosing less frequent room cleaning.
5. Food and Beverages	Reduce by design	<ul style="list-style-type: none"> Choosing circular food and beverage facilities.
	Reduce	<ul style="list-style-type: none"> Tourists can minimise food waste through their behaviour.
6. Tourism Activities	Reduce by design	<ul style="list-style-type: none"> Choosing low-impact activities.

Adapted from the Economic Commission for Europe (2022)

A recent literature review emphasises the importance of promoting social awareness through advertising to alert governments, tourism firms, and individuals about the imperative shift to CE (Rodríguez et al., 2020). Minimising environmental issues relies on individuals adopting sustainable practices, as highlighted by Robaina (2022). Tourists, in particular, can play a pivotal role in promoting circular economy principles in tourism (Robaina, 2022). Tourists with pro-environmental values are more likely to engage in sustainable behaviour during vacations (Perkins and Brown, 2012). Therefore, raising awareness among tourists is crucial, as it represents the weakest link in the value chain (Robaina, 2022). Thus,

towards tourism circularity (ATTC).

Past research (e.g., Holmes et al., 2019; Leonidou et al., 2015; Robaina, 2022) has illustrated the significance of demographic variances, such as age, nationality, and income, in elucidating tourists' awareness and behaviours regarding environmentally sustainable and/or circular practices. Thus,

H2. There is a positive direct relationship between domestic tourists' age (AGE) and their environmental consciousness (ENC).

H3. Domestic tourists' environmental consciousness (ENC) mediates the relationship between domestic tourists' age (AGE) and their overall ATTC.

Berezan et al. (2014) linked eco-friendly practices to education. Leonidou et al. (2015) demonstrated that tourists with higher education exhibit greener awareness and attitudes. Robaina (2022) discovered a positive correlation between higher education and circular travel behaviour. In contrast, Chia-Jung and Pei-Chun (2014) revealed that higher education is linked to less green consumer behaviour. Thus,

H4. There is a positive direct relationship between domestic tourists' educational level (EDL) and their environmental consciousness (ENC).

H5. Domestic tourists' environmental consciousness (ENC) mediates the relationship between domestic tourists' educational level (EDL) and their overall ATTC.

According to Karpiak and Baril (2008), Millar and Baloglu (2011), and Robaina (2022), females have higher preferences for green attributes than males, and their circular behaviour is also higher. Thus,

H6. Domestic tourists' gender (GEN) moderates the relationship between the tourists' ENC and their overall ATTC.

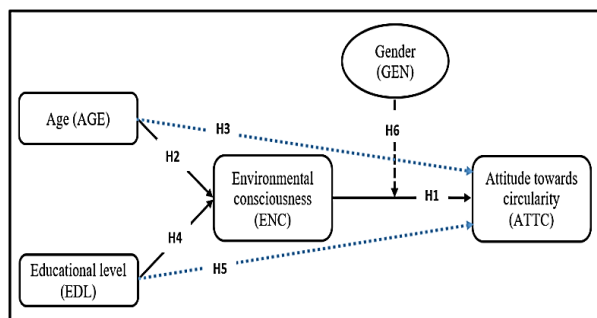


Figure 1 - The Theoretical Model

3. Methodology

3.1 Research design and data collection:

The study employs a questionnaire-based survey among domestic tourists in Egypt to explore their perceptions and attitudes towards tourism circularity. The research aims to identify factors influencing attitudes and their impact on behaviour. Utilising quantitative analysis, the survey seeks to validate hypotheses, which is deemed appropriate in

such studies (Creswell, 2014; Peters et al., 2018).

A three-section structured questionnaire was administered through both face-to-face and online surveys, as outlined in Table 2. A Likert scale ranging from 1 (fully disagree) to 5 (fully agree) was employed in the questionnaire. The initial section of the questionnaire focuses on collecting data regarding the demographics and travel preferences of the participants. The second part of the study is dedicated to assessing the environmental awareness of domestic tourists. This is done by having them express their level of agreement with various statements related to circular economy practices and their connection to their behaviour in their everyday lives. Essentially, the goal is to gauge how environmentally conscious and aligned with circular economy principles these tourists are in their daily activities. The third part of the questionnaire is centred on evaluating the attitude of domestic tourists towards tourism circularity. This evaluation involves participants expressing their degree of agreement with various statements that pertain to circular economy practices and how these practices relate to their behaviour during their vacation.

Before the main survey, both the translated Arabic version and the original English version of the questionnaire underwent thorough examination and proofreading by diverse groups, including tourism professors, researchers, and a small sample of domestic tourists across different cities in Egypt. This pilot study aimed to eliminate errors, ambiguities, and language issues, ensuring the questions' clarity and comprehensibility (Sekaran and Bougie, 2016).

Invitations to answer the questionnaire were distributed randomly through social media platforms (i.e., Facebook on travel pages and the Trip Advisor website), which targeted only Egyptian participants with previous domestic tourism experience, as determined by their comments. Additionally, filters were added to the online survey form to ensure that only Egyptian participants with prior experience in domestic vacation were able to complete it.

Before commencement, emphasis was placed on ensuring the anonymity of responses to discourage individual respondents from concealing or distorting their answers. The surveys were carried out from July 2023 to September 2023. A total of 397 completed and valid responses were received out of 450, with a response rate of 88%. According to Veal (2018), this sample size is larger than the critical degree of sampling error and level of confidence.

Table 2 - The questionnaire design

Subject	Adapted from	Indicator	Scale
Demographics and Travel Preferences (Dem)	Robaina, 2022; Leonidou et al., 2015; Holmes, Dodds and Frochot, 2019). Berezan, Millar and Raab (2014; Chia-Jung and Pei-Chun (2014) Karpiak and Baril (2008); Millar and Baloglu (2011)	• Age	Ratio
		• Gender	Nominal
		• Education Level	Ordinal
		• City of residence	Nominal
		• Favorite destination for domestic tourism	Nominal
		• Favorite type of tourism	Nominal
		• Favorite time of year to travel	Nominal
		• Favorite accommodation type	Nominal
		• The average duration of stay	Ratio
		• Favorite travel arrangement (self-arrangement or travel agency)	Nominal
Environmental Consciousness (ENC)	Robaina, 2022 Perkins and Brown, 2012 Rodriguez, Florido and Jacob, 2020; Aryal, 2020	In my normal daily life, and for environmental considerations: ENC1. I recycle glass. ENC2. I recycle cardboard and paper. ENC3. I recycle plastic packaging materials. ENC4. I separate the organic garbage. ENC5. I try to limit food waste. ENC6. Before purchasing, I try to repair. ENC7. I buy and sell used products (furniture, appliances, clothes, etc.) ENC8. I prefer to purchase locally produced products. ENC9. I purchase products with minimal packaging. ENC10. I am keen to save energy and water. ENC11. I move by public transportation. ENC12. I move using sustainable transportation (bicycle, electric bus, etc.) ENC13. When I leave the house, I turn off the lights, heating, and air conditioning. ENC14. I take into account the house's level of energy efficiency. ENC15. We encourage environmental awareness among family members.	Likert (5)
Overall Attitude towards Tourism Circularity (ATTC)	Sorensen and Bærenholdt, 2020; Robaina, 2022; Economic Commission for Europe (2022); Manniche et al. (2020); Kirchherr, Reike and Hekkert (2017);	During my vacation, and for environmental considerations: ATTC1. I use modern sharing platforms for accommodation (e.g., Airbnb, HomeExchange, etc.). ATTC2. I choose more eco-friendly modes of transportation for travel (e.g., trains, and buses, instead of flights and cars). ATTC3. I prefer to engage in activities that focus on movement rather than transportation (e.g., biking, hiking, visiting national parks, stargazing, etc.). ATTC4. I usually prefer to participate in tourism activities that do not require nightly accommodation. ATTC5. I am keen to minimise my wasted food (e.g., choose hotels that have services related to food recycling) ATTC6. I prefer to stay at eco-certified hotels or camping sites (e.g., green star labelled hotels) ATTC7. I prefer to use products that are made and supplied locally (e.g., small shops rather than big chains and hotels that hire local people and use local products). ATTC8. When I leave the room, I switch the lights and air conditioning off. ATTC9. I don't lower the temperature for the air conditioner below 22 °C. ATTC10. I don't ask for new towels or sheets daily, only if necessary. ATTC11. I'm interested in learning more about the environment of the destination that is being visited, including any environmental challenges and problems. ATTC12. I'm keen to take part in any efforts to address environmental problems at the destination I'm visiting.	Likert (5)

3.2 Data analysis method

This study utilises a quantitative method, employing partial least squares structural equation modelling (PLS-SEM) through SmartPLS 4 for data analysis. PLS-SEM is known for its robustness in estimating models, accommodating both normal and extremely non-normal skewness and/or kurtosis in the data (Hair et al., 2017). Following Leguina's (2015) recommendation, a two-step approach is applied: initially, testing the outer model for convergent and discriminant validity, and subsequently, evaluating the inner model for hypothesis testing.

4. Findings and analysis

4.1 Descriptive Analysis

4.1.1 Tourist's Profile

The most common age group among participants was 30 to 41 years old, comprising 39.6% of the sample, followed by the 18 to 29 age group at 27.8%, and the 42 to 53 age group at 24.3%. The gender distribution was nearly equal, with 48.9% male and 51.1% female. A majority of participants, accounting for 63.7%, held a bachelor's degree. The sample represented diverse regions in Egypt, including Cairo (22.9%), Alexandria (17.6%), Giza (14.5%), Elgharbiya (9.7%), and Sohag (4.3%).

4.1.2 Travel Characteristics

The participants favour Sharm El-Sheikh and Red Sea cities as their top choices for domestic tourism, comprising 49.8% of the preferences. The North Coast follows at 18.8%, while Marsa Matrouh, Alexandria, Siwa, and other destinations are nearly equally favoured, each accounting for approximately 5% of the preferences. Recreational and beach tourism emerged as the preferred choice for domestic tourists, constituting approximately 80% of respondents. The majority, accounting for 87%, preferred travelling during the summer holidays. In terms of accommodation, resorts and four- to five-star hotels were the top choices, totaling around 61%, followed by hotel apartments and chalets at approximately 17%. About 82% indicated an average stay duration of 2 to 5 days, with a few opting for longer stays and even fewer choosing single-day excursions

without overnight stays. Regarding travel arrangements, there was a nearly equal split, with 53.2% opting for self-arrangement and 46.8% relying on travel agencies.

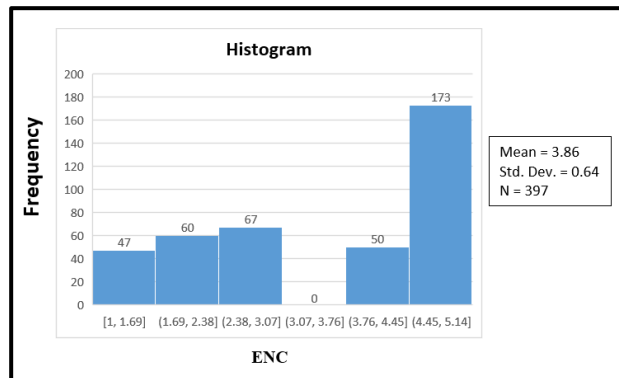


Figure 2 - The environmental consciousness level of domestic tourists in Egypt

Based on the results, approximately 56% of domestic tourists in Egypt demonstrate high environmental awareness, while 26.9% lack environmental awareness (see Figure 2).

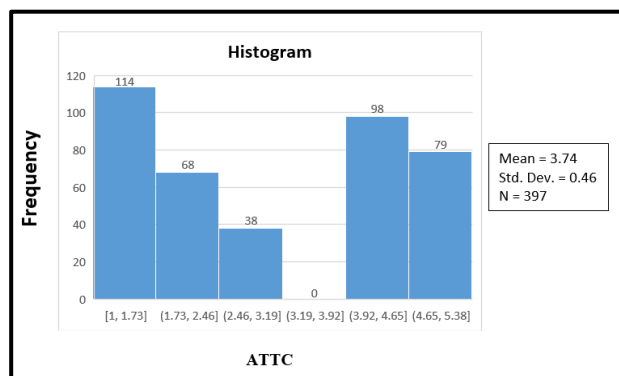


Figure 3 - Overall Attitude towards Tourism Circularity

According to Figure 3, only 44.6% of the domestic tourists in Egypt showed a positive attitude towards circularity, while 45.8% demonstrated a negative attitude.

4.2 Evaluation of the Outer Measurement

4.2.1 Convergent validity (model's performance)

At the outset, elements characterized by low loadings (i.e., ENC14, ENC15, ATTC1, ATTC3, ATTC4, and ATTC5) were excluded owing to failure to meet the prescribed threshold values (≥ 0.6). Then, several metrics, encompassing composite reliability (CR),

Cronbach's alpha, discriminant validity, and convergent validity, were employed to assess the reliability and validity of the outer model. All these metrics indicate compliance with the standards for the convergent validity of the model, as outlined by Hair et al. (2021). Furthermore, Variance Inflation Factor (VIF) values, all falling below 5, signified low correlations among predictors, thereby satisfying the criteria for convergent validity, as stipulated by James et al. (2013) (see Table 3).

Table 3 – Evaluation of the Outer Measurement Model and VIF for Multicollinearity

Construct	Item	Outer loadings	Cronbach (above 0.70)	CR (above 0.70)	AVE (above 0.50)	Convergent validity CR > AVE AVE > 0.50	VIF
Environmental Consciousness (ENC)	ENC1	0.741	0.932	0.934	0.555	Yes	2.505
	ENC2	0.665					2.510
	ENC3	0.727					2.778
	ENC4	0.722					2.435
	ENC5	0.788					3.215
	ENC6	0.735					2.371
	ENC7	0.752					2.681
	ENC8	0.839					4.043
	ENC9	0.828					3.426
	ENC10	0.657					2.463
	ENC11	0.801					3.060
	ENC12	0.736					2.535
	ENC13	0.666					2.693
Overall Attitude towards Tourism Circularity (ATTC)	ATTC2	0.639	0.900	0.909	0.595	Yes	1.599
	ATTC6	0.772					2.483
	ATTC7	0.663					1.858
	ATTC8	0.720					2.101
	ATTC9	0.852					4.143
	ATTC10	0.838					2.463
	ATTC11	0.794					3.060
	ATTC12	0.858					2.535

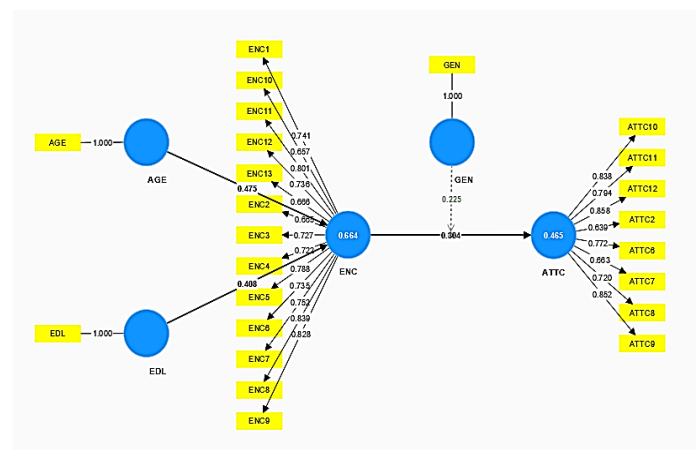


Fig. 4 – Factor Loading Results (Smart-PLS Output)

4.2.2 Discriminant Validity

According to Hair et al. (2021), if the correlation for the HTMT ratio is less than 0.85, it suggests that the model demonstrates discriminant validity, as shown in Table 4.

Table 4 - Discriminant Validity - Heterotrait-Monotrait Ratio (HTMT)

	AGE	ATTC	EDL	ENC
ATTC	0.531			
EDL	0.706	0.680		
ENC	0.787	0.620	0.768	
GEN	0.671	0.688	0.671	0.768

4.3 Assessment of the Structural Inner Model

4.3.1 Coefficient of determination (R²) and model fit

In PLS-SEM, R² gauges how well regression predictions match the data. A satisfactory R² is 0.10, and 0.5 suggests a moderate correlation (Hair et al., 2021; Gamiljj and Abd Rahman, 2023). This study's R² for overall attitude towards tourism circularity (ATTC) is 0.465, indicating effective prediction by independent variables (ENC, AGE, and EDL). For environmental consciousness (ENC), the R² is 0.664, confirming effective prediction by AGE and EDL. Overall, these findings affirm a moderate-to-good fit for the model.

4.3.2 Hypotheses testing

Table 5 - Hypothesis Testing (Bootstrapping)

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Decision
H1. ENC -> ATTC	0.304	0.308	0.125	2.428	0.015	Supported
H2. AGE -> ENC	0.475	0.476	0.079	5.996	0.000	Supported
H3. AGE -> ENC -> ATTC	0.144	0.145	0.062	2.319	0.020	Supported
H4. EDL -> ENC	0.408	0.41	0.076	5.361	0.000	Supported
H5. EDL -> ENC -> ATTC	0.124	0.128	0.061	2.025	0.043	Supported
H6. GEN x ENC -> ATTC	0.225	0.219	0.114	1.973	0.049	Supported

Hypothesis testing assesses the suggested link between constructs, with a significant influence of independent variables on dependent variables. A relationship is significant if the T-value exceeds 1.96 and the P-value is < 0.05 (Hair et al., 2021). For result stability, 5000 bootstrapped subsamples are used in smart PLS4 (Gamiljj and Abd Rahman, 2023).

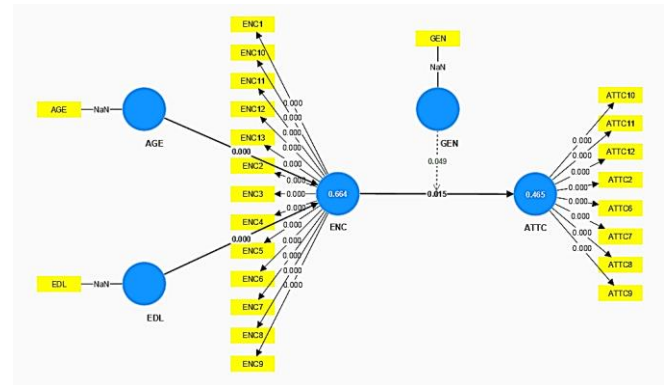


Fig. 5 – Bootstrapping (P values: Smart-PLS Output)

Table 5 reveals that the six hypotheses in the predefined path model demonstrate statistical significance, satisfying the conditions of a T-value exceeding 1.96 and a P-value below 0.05. Consequently, hypotheses H1, H2, H3, H4, H5, and H6 have garnered support.

5. Discussion and implications

This study fills a gap in tourism research by focusing on the circular economy in domestic tourism in Egypt, a developing country, providing unique insights into challenges and

opportunities. Unlike previous studies that primarily concentrated on international tourists, this research innovatively centres on domestic tourists, acknowledging their substantial impact on the circular transition. By integrating demographic factors like age, gender, and education, the study delves into unexplored territory, unravelling nuanced relationships that shape sustainable tourism behaviour. This approach broadens the understanding of circular tourism and emphasises the significance of tailoring sustainability efforts to the preferences and behaviours of the local population.

The findings affirmatively answer **RQ1**, revealing that about 56% of domestic tourists in Egypt demonstrate high environmental awareness, in line with the global trend of increasing environmental consciousness. Furthermore, the results reveal that 26.9% of domestic tourists lack environmental awareness, suggesting a significant portion of the population may require targeted efforts to enhance their awareness levels. Interestingly, only 44.6% of domestic tourists demonstrated a positive attitude towards circularity, while 45.8% exhibited a negative attitude. This discrepancy highlights a potential disconnect between environmental awareness and attitudes towards circular practices. This aligns with previous arguments made by Budovska et al. (2019) and Rafiq et al. (2022), emphasising that despite the growing awareness among travellers in developing nations, there is often a gap between attitude and behaviour, where actions do not align with environmental concerns.

The alignment of these findings with previous arguments underscores the complexity of translating awareness into positive attitudes and behaviours. It suggests that while a substantial portion of tourists may be environmentally aware, this awareness does not necessarily translate into a positive stance towards circular practices. This insight emphasises the need for targeted interventions and educational campaigns to bridge the gap between awareness and behaviour, fostering a more sustainable and circular tourism culture among domestic tourists in Egypt.

RQ2 delves into understanding the relationships between key variables. The results indicate a positive relationship between environmental consciousness (ENC) and overall attitude towards tourism circularity (ATTC). This supports Hypothesis 1 (H1), affirming that environmentally conscious domestic tourists are more likely to have a positive attitude towards circular tourism practices. Sorensen and Bærenholdt (2020) and Aryal (2020) asserted that the transition to a circular economy in the tourism sector hinges on tourists' awareness. Additionally, in alignment with previous research (e.g., Holmes et al., 2019; Leonidou et al., 2015; Robaina,

2022) that illustrated the significance of demographic variances, such as age and education, in elucidating tourists' awareness and behaviours regarding environmentally sustainable and circular practices, the study reveals that age and educational level influence environmental consciousness, corroborating H2 and H4. The study also verifies the mediation influence of environmental consciousness on the connection between age (H3), educational level (H5), and the overall attitude towards tourism circularity. The interpretation of these relationships suggests that as tourists grow older and attain higher levels of education, they tend to exhibit higher environmental consciousness, influencing their overall attitude towards circular tourism. This insight provides a nuanced understanding of the demographic factors shaping tourists' perceptions and preferences related to circular economy practices.

RQ3 investigates the potential moderating effect of gender on the relationship between environmental consciousness and an overall attitude towards tourism circularity. The findings support H6, indicating that gender does moderate this relationship. Female domestic tourists tend to have higher preferences for green attributes and exhibit higher circular behaviour than males. This underscores the significance of gender as a factor influencing attitudes and behaviours related to sustainability in tourism and confirms the previous arguments and findings (e.g., Karpiak and Baril, 2008; Millar and Baloglu, 2011; Robaina, 2022).

The study unveils intriguing findings on domestic tourists' perceptions and attitudes towards tourism circularity in Egypt, notably highlighting Sharm El-Sheikh and Red Sea cities as preferred destinations for domestic vacations and recreational and beach tourism as the preferred type of tourism. With over half of domestic tourists demonstrating environmental awareness, the study challenges misconceptions about sustainability in developing countries. Emphasising the significance of domestic tourism, which contributes 86% to global tourism, the research

underscores the need for increased focus on this sector to promote circular practices and support local economies.

Additionally, the study delves into the influence of demographic factors—age, education, and gender—on environmental consciousness and attitudes. It establishes a positive relationship between tourists' environmental consciousness and their overall attitude towards tourism circularity, suggesting the potential for behavioural changes through heightened awareness. The study introduces the mediating role of environmental consciousness in the relationship between demographic factors and overall attitude, emphasising the strategic lever of influencing environmental awareness for promoting circular behaviours.

Furthermore, the findings emphasise the pivotal role of education and awareness in driving sustainable tourism practices, particularly among tourists with higher education levels. Therefore, it is crucial to raise awareness among tourists about the impact of their consumption choices at destinations, as concluded by Giurea et al. (2018). Moreover, insights into preferences and travel characteristics, including preferred destinations and accommodation choices, provide practical guidance for businesses and policymakers to align offerings with circular and sustainable principles. According to Elsayy (2023), for success, businesses ought to integrate strategies that correspond to the preferences and suggestions of individuals. This nuanced exploration contributes to both academic understanding and practical insights, opening avenues for further research and targeted interventions to enhance the sustainability of the tourism industry.

5.1 Study implications

The study's findings offer valuable implications for tourism stakeholders in Egypt and similar developing economies. The identified environmental awareness among domestic tourists creates an opportunity for businesses and policymakers to meet the growing demand for sustainable tourism experiences. Tangible pathways, including targeted marketing, educational campaigns, and infrastructure

development, can enhance the sustainability of the tourism industry.

In the global context, the study contributes to the discourse on sustainable tourism by providing insights into the perceptions of domestic tourists in a developing country. Understanding circular tourism dynamics is crucial for advancing sustainable practices worldwide, emphasising the role of tourism in shaping environmental consciousness and circular economy adoption. This has implications for achieving sustainable development goals related to responsible consumption and production (i.e., SDG 12).

For the Egyptian tourism industry, the study suggests leveraging environmental awareness among domestic tourists. Tailoring offerings and marketing strategies to circular practices and sustainable experiences aligns with the preferences of environmentally conscious travellers. Recognising the significance of domestic tourism, stakeholders can invest in infrastructure, education, and promotional activities to enhance the appeal of circular tourism.

Implications extend to academia, urging scholars to focus on developing countries and domestic tourism markets in the study of circular economy practices. The integration of demographic factors hints at avenues for deeper research into the relationships between age, gender, education, and sustainable tourism behaviours.

Policymakers can formulate policies to support the transition to circular tourism by incentivizing businesses, investing in eco-friendly infrastructure, and implementing educational campaigns. Environmental education initiatives are crucial, focusing on circular practices, the environmental impact of tourism, and individuals' role in promoting sustainability.

Targeted interventions based on demographic considerations can bridge the attitude-behaviour gap and foster a more sustainable tourism culture. Moreover, collaborative efforts between educational institutions, NGOs, and the tourism industry can disseminate information and promote a culture of responsible and circular tourism. According to

Florido et al. (2019), effective Circular Economy (CE) strategy execution necessitates collaboration among key stakeholders, such as destination management organizations (DMOs), tourism businesses, locals, and visitors.

6. Conclusions

The study furnishes empirical evidence of environmental consciousness among domestic tourists in Egypt, elucidating relationships between key variables and highlighting the moderating role of gender. These findings not only enhance understanding of circular tourism perceptions but also offer actionable insights for stakeholders in Egypt's tourism industry, paving the way for a more sustainable and circular sector. By acting on these implications, stakeholders can potentially set an example for similar contexts globally.

The study commenced by highlighting global trends impacting the travel industry, emphasising the post-COVID-19 surge in domestic tourism and the growing importance of sustainability. The literature review stressed the tourism sector's need to transition towards circularity to mitigate its ecological footprint. Focusing on Egypt's nascent awareness of the circular economy, the study addressed the scarcity of research on tourists' attitudes in developing nations, formulating research questions aimed at unravelling environmental consciousness among domestic tourists.

Subsequent sections included a comprehensive literature review, conceptual frameworks, and a meticulous methodology, culminating in robust findings. The discussion emphasised the study's outcomes in addressing research questions, revealing a positive relationship between environmental consciousness and the overall attitude towards tourism circularity. The mediating role of environmental consciousness in the relationship between demographics and attitude provided nuanced insights into factors influencing circular behaviour.

The findings underscore the need for targeted educational campaigns to bridge the awareness-

action gap and foster environmentally conscious tourists. Stakeholders, including destination management organizations and businesses, are urged to collaborate in promoting circularity, emphasizing shorter travel distances, longer stays, and eco-friendly transportation. In the unique context of Egypt, the study advocates for a shift towards domestic tourism, acknowledging its economic and cultural significance. Policymakers are encouraged to consider circular economy principles in shaping tourism policies, ensuring sustainable growth. The study's revelations about tourists' preferences and travel characteristics provide practical insights for tailoring interventions to diverse needs.

The study's novelty lies in its exploration of circular tourism in a developing country, contributing valuable insights to the limited literature on this intersection. By addressing the dearth of research on tourists' attitudes towards circularity, especially in developing nations, this study fills a critical gap and lays the foundation for future investigations.

6.1 Limitations and Areas for Future Research:

The study primarily focuses on domestic tourists in Egypt, limiting the generalizability of the findings to other regions or international tourists. The demographic characteristics, preferences, and attitudes of domestic tourists may differ significantly from those of international visitors. Moreover, the study relies on self-reported data collected through questionnaires, which are susceptible to response bias. Participants may provide socially desirable responses or may not accurately represent their true attitudes and behaviours.

Despite these limitations, this study lays the groundwork for future research in the burgeoning field of circular tourism. Subsequent studies can address these limitations by employing more diverse and representative samples, incorporating longitudinal designs, and exploring a broader array of circular economy dimensions. Additionally, comparative analyses across

different countries and cultural contexts can offer a more comprehensive understanding of the factors influencing tourists' circular behaviours. This would reveal variations influenced by diverse cultural, economic, and environmental contexts. Such a study could identify common patterns or unique challenges, offering tailored strategies for circular tourism development in specific regions.

Moreover, the role of technology in promoting circularity within the tourism industry remains an underexplored area. Research could investigate how emerging technologies, such as blockchain for transparent supply chains, artificial intelligence for resource optimization, or virtual reality for immersive sustainable tourism experiences, can be leveraged to enhance circular practices.

Furthermore, circular tourism is not only about the actions of tourists but also involves the engagement of local communities. Investigating how community perceptions, participation, and collaboration contribute to the success of circular initiatives would offer a holistic understanding of the social dynamics involved in circular tourism development.

By exploring these suggested areas for future research, scholars and practitioners can advance the knowledge base on circular tourism, paving the way for more sustainable and responsible practices within the global tourism industry.

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