



# Article Drivers and Barriers towards Circular Economy in Rural Tourism Destinations: A Case Study of Tunis Village, Egypt

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Abstract: This study explores the drivers and barriers of the Circular Economy (CE) in Tunis Village, a rural tourism destination, as a case study of emerging economics. We adopted an exploratory case study methodology. Telephone interviews (n = 10) with stakeholders were conducted, and a survey of employees (n = 123) was distributed. Qualitative data were thematically analyzed, and quantitative data were descriptively presented. The results show that improving relationships with the local community, gaining financial benefits, and improving relationships with suppliers were the top perceived drivers. The top perceived barriers are poor economic development, which makes the implementation of large-scale sustainability difficult; a lack of technology and advanced technologies; and the absence of effective and integrated waste management and recycling systems. Considering the exploratory nature and design of this study, the results cannot be generalized. However, the results can help plan future research on a larger scale in developing economies. Furthermore, the findings can inform policymakers on how to better apply CE practices in rural tourism destinations. The topic of CE has been under-researched in connection with developed countries, and this study is the first to examine CE in rural tourism destinations in emerging countries. This underlines the specific drivers and barriers related to CE as a sustainable development practice. Additionally, it contributes to the academic debate on this notion.

Keywords: circular economy; rural destination; Egypt; SDGs; Tunis Village; agro-tourism

# 1. Introduction

There is a limit to the linear economy model of 'take, make, dispose' that relies on cheap, easily accessible materials and energy [1]. In addition to exhausting natural resources, waste is generated [2]. However, the circular economy has many advantages. The concept of 'Circular Economy' (CE) has become increasingly popular among policymakers and corporate leaders. Research on CE has just begun, despite its forward-thinking and controversial discussions [3]. Nevertheless, the CE concept and its elements are much older than the concept itself, and it is difficult to determine when it was born [4]. As Rodríguez et al. [2] assert, the transition to a circular economy is imperative for sustainable development. The Ellen MacArthur Foundation has been instrumental in this shift, leveraging its platform to promote CE principles. By disseminating knowledge, fostering innovation, and building networks among stakeholders, the foundation enhances the visibility and feasibility of circular practices. This concerted effort has catalyzed changes in policies, business models, and consumer behaviors, thereby facilitating a broader and more effective adoption of the circular economy [5]. The foundation further formulated the following three critical principles of CE: preserve and enhance natural capital, optimize resources yields, and increase system effectiveness [1,6].

According to Sorin et al. [7], a circular advantage is a new model of business and technology for creating value in a world without growth limits. The implementation of



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**Copyright:** © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/). CE principles in tourism will act as a value-creation source for hotels and other tourism SMEs [8]. Furthermore, CE drivers provide a competitive advantage for tourist companies and address environmental concerns [9]. However, providing value to customers requires companies to rethink how they offer it [10].

In addition, Florido et al. [11] detailed that circular business models would facilitate sustainable development and increased profitability, mainly in the provision of services (hotel, food and beverage, and leisure sectors) and the flow of materials in construction fields, energy, food, and water. Tourism businesses and destinations can apply CE solutions to reverse these trends and reduce natural resource consumption, waste, and CO<sub>2</sub> emissions. The main advantages of CE include waste reduction, energy reduction, and the ability to avoid new consumption [10,12,13]. Thus, one can argue that CE keeps materials, components, and products at their highest values throughout their lifecycles.

CE's disadvantages of CE have rarely been discussed in the literature, and future research is needed on this subject. However, Gil, a journalist, has pointed out the main disadvantages as follows: lack of regulations governing legal competition among companies; lack of environmental awareness on the part of suppliers and clients; economic barriers and access to financing; technical skills and abilities that are not yet present in the workforce; presence of waste that is difficult to recycle and transform; consumer acceptance problems [14].

Ratner et al. [15] studied barriers and drivers of CE in EU countries (well-developed institutes) and Russia (less-developed institutes). They concluded that the most significant differences are in institutional support systems, which include ways to facilitate information, regulate new technologies, and increase commercial attractiveness and organizational feasibility [15]. In a study by Ead et al. [3], economic factors appear to dominate the adoption of CE practices rather than environmental factors.

Generally, literature on the relationship between CE and tourism is scarce worldwide [5,16,17]. Furthermore, there is no clear consensus on the definition of CE in the hospitality sector [18], which, in turn, is the same scarcity as the literature for Egypt. As CE in tourism is an inclusive industry, literature should focus on the main tourism stakeholders: tourists, hotels, restaurants, tour operators, and destination management organizations [16]. Such research is particularly important in Egypt, where tourism is a significant economic sector. Egypt's unique cultural and natural heritage attracts millions of tourists each year, but this also brings challenges related to environmental preservation and resource management. Conducting research tailored to the Egyptian context can help develop sustainable tourism practices that protect the country's heritage while contributing to its economic growth. Overall, increased research efforts are necessary to identify, develop, and implement sustainable tourism solutions that can address the diverse challenges faced by the tourism industry, both globally and locally [19].

Egypt has established a CE initiative to 'decouple economic growth' from 'environmental damage' and 'promote a resource-efficient and 'eco-friendly society' [3]. The Egypt 2030 Vision adopted the CE concept in 2015 as a new development strategy to preserve the environment, prevent pollution, and promote sustainable development. In addition, according to Rezk et al. [20], integrating circular economy initiatives into Egypt's tourism industry can lead to significant environmental, economic, and social benefits. By focusing on waste reduction and resource conservation, the sector can become more sustainable, resilient, and attractive to tourists who prioritize sustainability. Additionally, promoting sustainable tourism practices can attract eco-conscious travelers, further boosting the industry's appeal and revenue.

However, Rezk et al. [20] emphasized that while there are significant challenges to implementing a circular economy in Egypt, including a limited understanding of the concept, insufficient government support, and inadequate infrastructure, there are also promising opportunities. These opportunities include a growing demand for eco-friendly products and services, as well as a favorable business environment. This is confirmed by similar studies, including Ead and Fahmy [3], who demonstrated that there is a lack of

awareness of CE in Egypt, as only 24% of respondents had heard of it. This percentage is expected to be much lower for locals (both literate and illiterate). These studies emphasize the lack of studies on CE in Egypt in relation to tourism.

This study addresses numerous studies (for example [3,8,10,20–22]) who have called for additional research on CE in developing countries. Specifically, this study aimed to investigate the factors that drive and hinder the implementation of CE in Tunis Village, a rural tourism destination, and an example of emerging economies. By providing new academic insights, the outcomes of this research can benefit tourism and hospitality professionals as well as policymakers.

This study responds to the call for further research on CE in developing countries by exploring the drivers and barriers of the circular economy in Tunis Village, a rural tourism destination in Egypt. By examining this specific context, this study aims to contribute to the academic understanding of CE in rural tourism and provide practical insights for tourism and hospitality professionals as well as policymakers. The findings will help identify effective strategies for implementing CE in similar settings, thereby promoting sustainable tourism development and supporting Egypt's broader sustainability goals.

#### 2. Literature Review

# 2.1. Circular Economy in Tourism and Hospitality

There is no favored definition of CE in the literature, as it is a relatively new concept. Many definitions of CE have been proposed. Therefore, Kaszás, Keller, and Birkner [5] studied these definitions in search of the main elements of CE and summarized them as follows: resource usage reduction, extended lifetime, recycling, renewal of natural systems, closed-loop flow, economic development, and waste extraction [5]. Then, she concluded that *"circular economy is a form of closed-loop economic development, whose aim is to extend the products'* lifetime, enhancing productivity by applying the 4R principle, recycling and emission and waste extraction. It also aims to renew the natural systems, reduce resource usage, generally change the production and consumption systems, and strive for social equity" ([5], p. 69).

Kaszás et al. [5] argued that the CE concept could be brought to tourism following the 7P principle of service marketing (product, price, place, promotion, people, process, and physical evidence), as it is not only focused on the physical elements that were illustrated in Rodriguez's definition of CE ('can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing and recycling' [2]. However, literature is scarce on CE in tourism, as has been stated by [5,17]. Thus, there is a need for further research on the intersection of tourism and CE to provide possible solutions for a more sustainable tourism industry [16].

According to Nedyalkova [23], circular economy initiatives have not paid much attention to tourism as a potential industry. However, the European Union is currently focusing on circular tourism as part of a circular economy business model that is consistent with the SDGs. Circular tourism engages all actors (travelers, hosts, tour operators, and suppliers) and adopts eco-friendliness. Because of the large number of actors involved and the hedonistic consumption pattern of visitors, a circular economy in tourism is difficult to achieve [24]. In the past six decades, the United Nations World Tourism Organization (UNWTO) has reported that tourism has become one of the world's largest and fastest-growing industries. UNWTO has said that between 2010 and 2030, the number of international tourist arrivals is forecast to rise by 3.3% annually to 1.8 billion [25]. However, to reduce consumption footprints, maximize material circularity, and return more than it takes, the tourism sector must transition to the CE model as soon as possible [23].

A "Circular Tourism" model, according to Nedyalkova [23], creates a virtuous cycle that allows the planet's limited resources—raw materials, water, and energy—to be used in a productive way without compromising the environment, and ensures that (travelers, hosts, tour operators, suppliers) adopt an ecologically responsible attitude. Thus, applying

CE in the tourism sector will be more sustainable by following its principles: reuse by design, refuse, reduce, reuse, repair, refurbish, remanufacture, repurpose, and recycle.

## 2.2. Drivers of CE

In general, researchers have identified numerous drivers or enablers of CE. Drivers were classified and categorized based on sectors (mining, tourism, etc.), countries (developed vs. developing), nature, context, and study purpose [26,27]. Among others, Govindan and Hasanagic [28] analysed the drivers, barriers, and practices relating to the circular economy in the supply chain. They classified drivers into five categories: health and environment protection, society, product development, policy, and economy. Drivers can also be classified into internal and external factors [10,29]. According to Ekins et al. [26], some categorizations of barriers and drivers take a thematic approach rather than focusing on the internal–external divide. Thematic classification is based on economics, institutions, technological innovation, organizational development, knowledge, skills, habits, and culture. Finally, the results of the Organisation for Economic Cooperation and Development (OECD) (2020) survey established that circular economies are driven mainly by environmental (73%), institutional (52%), and socioeconomic factors (51%). In addition, job creation (47%), private sector initiatives (46%), creative business models (43%), technical developments (43%), and research and development (41%) drove the circular transition.

In the case of tourism and hospitality research, Sorin et al. [7] established that business customers' and end consumers' demand, water and energy consumption cost pressure, waste management costs, and property maintenance costs are among the major drivers of CE in Scandinavian hotel operators. The *Delphi* study by Sørensen et al. [24] found that the top three ranked drivers for better tourist CE activities are as follows: 1. Tourist awareness about the climate and consumption; 2. Optimization of energy and cooling systems in restaurants and hotels; 3. National and/or EU-grounded policies support train travel as a means of sustainable transport. Surprisingly enough, they mentioned that 'the education of tourists in sustainable behavior by actors in the sector such as hotels", businesses donating used materials for charity', and 'waste problems can spur governments to action' e.g., 'in developing countries'. Each of these received no votes as potential drivers of CET activities.

Recently, Khan et al. [8] surveyed 256 tourism SMEs (hotels and accommodations, travel agencies, tour operators, and reservation service activities) established in four countries (Cyprus, France, Italy, and Spain). According to the findings, improving environmental performance, service quality, and public reputation are the top three drivers for adopting CE practices, and improving environmental performance is the leading driver. According to an agro-tourism manager, improving environmental performance is an operational framework for better agrotourism [30]. In addition, Rodríguez et al. [2] recommended that, regarding agriculture and rural tourism, we need to develop and improve the environmental performance of agro-tourism activities to prelaunch and promote sustainable tourism in a new approach to CE. However, keeping up with leading competitors, improving supplier relations, and satisfying tourism sector association requests are also important [8].

# 2.3. Barriers to CE

Similar to drivers, barriers or challenges to Circular Economy (CE) implementation have been categorized into various typologies. Hina et al. [31] through a systematic literature review of 126 articles on the drivers and barriers of circular economic business models, identified a prevalent classification of CE barriers as internal and external. Internal barriers encompass organizational, financial, and product characteristics, and focus on the difficulties that emerge within an organization. In contrast, external barriers involve consumer-related issues, legislative hurdles, economic constraints, supply chain complexities, and sociocultural and environmental challenges.

In the context of tourism and hospitality, Khan et al. [8] found that the top three barriers to green or CE practices among tourism SMEs are shortage of funds, lack of information about potential partners, and insufficient skilled personnel. Additional barriers include a

lack of time, inadequate space within facilities, and insufficient environmental expertise. Furthermore, Martínez-Cabrera and López-Del-Pino (2021), based on a systematic review of 24 articles, identified 68 crucial Circular Economy Challenge Patterns (CECPs) and classified them into three perception levels: microenvironmental, macroenvironmental, and organizational. The microenvironment includes resources, value chains, and infrastructure; the macroenvironment covers political, economic, social, technological, environmental, and legal factors; and the organizational level involves strategy, structure, and culture.

However, barriers and drivers are not isolated; they function both contextually and interactively. Dijk et al. [32] proposed the concepts of 'web of constraints' and 'web of drivers' to illustrate how these factors interconnect rather than operate independently. In support of this notion, Bittner et al. [18] highlighted significant barriers to CE practices in the hospitality sector through a comparative study of the Netherlands and Indonesia. In the Netherlands, primary barriers include a lack of knowledgeable employees, an overwhelming number of circular initiatives, and prioritization of service quality over sustainability, often resulting in a trade-off between economic viability and CE strategy adoption. Conversely, Indonesia faces fundamental infrastructural and educational deficiencies, such as weak infrastructure, insufficient regulatory enforcement, lack of awareness and education about sustainability among public and hospitality managers, and the high cost of sustainable practices. Both countries also struggle with economic barriers, including high upfront costs for CE initiatives and lack of financial incentives or subsidies from governments. These barriers underscore the complexity and contextual variability of implementing CE across different economic environments and sectors.

## 2.4. Rural Tourism Destinations

Rural tourism benefits from the cultural and environmental value of the area in which it is developed. Rural regions offer unique tourism experiences because of their historical and cultural heritage [33]. Agrotourism and rural tourism need to be developed and improved to encourage and promote sustainable tourism in line with CE principles [20]. In rural environments, agrotourism represents a significant source of sustainable economic, social, and cultural development, and its development is a path to sustainable development [30]. Moreover, it is considered an effective way to develop circular practices in rural tourism and contribute to urban development [30]. Nevertheless, CE approaches must be used to develop rural tourism in a way that balances consumption and reproduction [34]. In addition, Yuan and Xue [35] argue that the development of small towns depends on their economic parameters, traffic conditions, and location. As demonstrated by Yuan et al. [35], developing agro-circular economy development models such as integrated energy utilization, eco-breeding, integrated waste management, and agricultural ecotourism is urgently needed.

#### 3. Methodology

#### 3.1. Research Design and Approach

Based on a qualitative approach and interpretivist philosophical assumptions, we adopted an exploratory case study as the research strategy. There is a dearth of research on CE in deploying countries, including Egypt [3]. Keegan [36] and Veal [37] emphasized that qualitative research is centered on the meaning rather than the measurement of data, asking what, why, and how much data are being collected. The primary purpose of using this approach in this study was to better understand the CE notion from the subjective experiences of individuals in a rural tourism context.

Qualitative research strategies include action research, case study research, ethnography, grounded theory, and narrative enquiry [38]. Owing to the nature of the study, an exploratory case study was conducted. According to Veal [37], cases can arise at any level, from individuals to nations. In addition, Yin [39] emphasized that using a case study strategy helps researchers to examine a case in depth while maintaining a holistic and real-world perspective, such as individual life cycles, group behavior, and managerial processes. Consequently, we holistically investigated the CE phenomenon in Tunis Village by focusing on the behavior of subgroups (pottery workshops, hotels, restaurants, etc.).

#### 3.2. Data Collection

When conducting a case study, data should be collected using different methods for better data triangulation [39]. This study used three methods: document analysis, semistructured interviews, and a questionnaire. Before data collection, the tools were approved by our institutional ethics committee in July 2022.

First, documents (governmental entities' websites, Facebook profiles, travel advisors, hotels, and academic articles related to Tunis) were used to conceptualize the context of Tunis Village.

Second, 10 semi-structured interviews were conducted with stakeholders, including tourism professionals. The primary purpose of the interview was to explore the CE status of Tunis Village. The interview schedule included four main questions (demographic profile—definition of EC—drivers of CE, and barriers to CE). The interview sample was identified and recruited through a purposeful sampling strategy, ensuring a diverse representation of stakeholders involved in the tourism and CE sectors in Tunis Village. This included residents, business owners, government officials, and representatives from non-governmental organizations (NGOs). The recruitment process involved the following steps:

- Initial Contact and Networking: We began by establishing contact with key informants in Tunis Village, such as community leaders and prominent business owners, who helped identify potential participants with relevant knowledge and experience in CE and tourism.
- Snowball Sampling: Following the initial interviews, we used snowball sampling to reach a broader range of participants. The interviewees were asked to recommend others who could provide valuable insights into the study topics. This method helped access hard-to-reach participants and ensured a comprehensive understanding of the local context.
- **Criteria for Inclusion**: Participants were selected based on their involvement in tourism activities, engagement with CE practices, and their role in the local community. We included a mix of gender, age, and socioeconomic background to capture diverse perspectives and experiences.
- **Informed Consent**: All participants were informed about the purpose of the study, their rights, and the confidentiality of their responses. Written informed consent was obtained prior to conducting the interviews and focus groups to ensure ethical research practice.

All interviews were conducted via telephone and recorded for transcription. The interviews lasted for between 13 and 20 min. All the interviews were conducted from July 2022 to September 2022.

Finally, a four-section self-administered printed questionnaire was used to collect data from employees working in the main tourism business in Tunis, including hospitality and accommodation (hotels and restaurants), pottery workshops, and other activities (bird watching, caricature museum, horses stable, etc.). The first section consists of demographic data (five items), the second section consists of 11 items related to CE practices, the third section consists of 12 items related to CE drivers, and the last section consists of 11 items related to CE barriers. The questionnaire was based on previous related literature (for example [8,10]) and interview analysis. It was piloted among ten employees. Simple random sampling was used. In total, 123 responses were obtained. The survey data were collected in October 2022. Survey questionnaires were distributed using a multifaceted approach to ensure comprehensive coverage and a diverse range of responses.

1. In-person distribution: Given the rural setting of Tunis Village and the limited digital connectivity, a significant portion of the survey distribution was conducted in person. Researchers visited various locations within the village, including local businesses, commu-

nity centers, and public gathering areas, to administer the surveys directly. This approach helped reach respondents who might not have access to online survey platforms.

- 2. Community meetings: Surveys were distributed during community meetings and local events. This strategy leveraged existing social structures and gatherings to facilitate the dissemination of questionnaires, ensuring that a broad cross section of the community was reached.
- 3. Collaboration with local organizations: We collaborated with local organizations and tourism operators who have established relationships with residents and businesses in Tunis Village. These partners assisted in distributing the surveys to their networks, thus extending our reach and improving the response rates.

By employing these diverse distribution methods, we ensured that the survey reached a representative sample of the target respondents in Tunis Village, thus enhancing the reliability and validity of the collected data.

## 3.3. Data Analysis

Qualitative datasets encompass information that is not numerically expressed [38]. Following Bree and Gallagher's [40] guidelines, qualitative data extracted from documents and semi-structured interviews were thematically analyzed using Microsoft Excel (2021). Regarding the quality of qualitative data, some issues must be highlighted.

- 1. **Positionality Statement**: The positionality within this study is informed by our background, experiences, and perspectives. Two of the authors held a postgraduate diploma in research methods. In addition, all of the authors participated in qualitative data collection and analysis. We acknowledge that our understanding and interpretation of the Circular Economy (CE) in Tunis Village is influenced by our academic training in sustainable development, environmental management, and tourism studies. Our interactions with the local community, stakeholders, and participants were conducted with a commitment to understand their lived experiences, challenges, and perspectives regarding CE. We recognize the importance of reflexivity and strive to remain aware of our biases, ensuring that they do not unduly influence our data collection and analysis.
- 2. **Trustworthiness of the qualitative** data: To ensure the trustworthiness of the qualitative data, we adhered to the principles of credibility, confirmability, dependability, and transferability.
- 3. Credibility: As the case study design was adopted, we employed triangulation using multiple data sources and methods, including interviews, document analysis, and surveys. This approach helped us capture a comprehensive and accurate picture of CE dynamics in Tunis Village. Data verification was also conducted, in which some participants reviewed and validated the findings to ensure accuracy and authenticity.
- 4. **Confirmability**: An audit trial was maintained throughout the research process, documenting all decisions, steps, and changes made during the study. This includes the rationale for selecting specific methodologies, data-collection procedures, and analytical techniques. Additionally, we used Microsoft Excel to manage and analyze the data systematically, enhancing transparency and [40].
- 5. **Dependability**: We conducted a thorough peer debriefing process in which colleagues with expertise in CE and qualitative research reviewed our methodology, data collection, and analysis procedures. This helped to identify and address potential issues and ensure the consistency and reliability of our findings. We also provide a detailed description of the research context, methodology, and procedures to allow for replication in future studies.
- 6. **Transferability**: While the study was context-specific to Tunis Village, we provided rich, thick descriptions of the setting, participants, and findings. This allowed readers to determine the applicability of our findings to other contexts. By describing the unique aspects of Tunis Village and the broader socioeconomic and environmental factors, we aim to highlight the potential for transferability to similar rural tourism destinations.

For quantitative data collected via the questionnaire, we used SPSS 26 for the descriptive analysis.

#### 3.4. The Study Context: Tunis Village

Tunis Village is a famous rural tourism destination in Fayoum Governorate, Egypt, approximately 95 km southwest of Cairo (Figure 1). Fayoum possesses impressive natural heritage, namely, geology and paleontology, deserts, hills, rural life, flora and fauna, lakes, and rivers, whereas natural springs make it an excellent eco-tourism destination [41,42]. These assets allow locals and tourists to enjoy a variety of outdoor activities, such as bird watching, desert safari excursions, wildlife observations (fauna and flora), horse riding, and fishing [42].



**Figure 1.** Location of Tunis Village in Fayoum Governorate; Fayoum Governorate location in Egypt (top right corner), Author (A.M).

Tunis Village is the starting point in the natural itinerary suggested by the Fayoum Tourism Authority (FTA), which indicates the village's significance in rural tourism in Fayoum [43]. Thanks to the village's location, which overlooks Lake Qarun, Tunis offers many rural tourism activities: camel walks, bird watching, island explorations, fishing, country food, and horse riding [43].

Two main development projects have transformed the village into a successful rural distention. The first project, 'Ecotourism for Sustainable Development in Fayoum—Egypt', was implemented in 2004 by the North South Consultant Exchange (NSCE) company and funded by "south-south international cooperation". (This project was designed to preserve and enhance the value of Fayoum's environmental and cultural heritage; make the area a tourist destination for both locals and internationals; encourage small and micro enterprises in the tourism sector with a variety of training and credit programs; assist the local handicraft sector in recovering and valuing its cultural heritage. For further information, visit https://nsce-inter.com/archives/work/ecotourism-for-sustainable-development-in-fayoum-egypt, accessed on 20 July 2022) The second project, 'Building Rural Assets with Valuable Opportunities (BRAVO)', was implemented by MAIS (Italian NGO for Empowerment, Interchange and Solidarity) and COPSE. (The purpose of this project is to reduce poverty among small producers, jobless youth, and women

excluded from the labor force by addressing the challenges preventing tourism, handicrafts, and agriculture from growing in Fayoum. For further information, visit http: //www.mais.to.it/en/layout1/91/BRAVO.html, accessed on 20 July 2022)

In addition to Evelyne's (Evelyne Porret, a Swiss potter, opted to settle in Tunis Village with her husband in the 1980s, and she then began to develop a pottery school to educate youngsters in the village how to form pottery) efforts, it has become a thriving tourist destination. Evelyne's pottery school turned the village into a destination for many tourists. It even became a resident place for many Egyptian and foreign artists who built their rural houses and spent their winters in the village for relaxation and inspiration. As a result, inhabitants are motivated to invest in tourism services such as hotels, cafeterias, pottery galleries, restaurants, and ecologies [44]. The village has approximately ten hotels, ranging from one to three stars.

Furthermore, 12 restaurants served local/international tourists. Early Evelyne's pottery school apprentices managed more than 30 pottery schools and galleries in the village. In turn, some residents have shifted their careers from farming to touristic professions, including local guides, safari drivers, and hotel staff [44]. Furthermore, locals and foreigners built their villas, some built for their own use, especially artists, writers, and actors seeking relaxation and inspiration from the stunning atmosphere of the village, while others made their villas (15 villas) available for tourists to rent, and another 10 villas were built to accommodate tourists.

# 4. Results and Discussion

#### 4.1. Interview Analysis

Based on their gender, most of the interviewees were males (n = 6/10). Most (8/10) were aged between 24 and 34 years, and only two respondents were older than 40 years. All the respondents hold a university degree, and all of them are Egyptian except for one (Owner of IIBS restaurant), who is Swiss. Some respondents were working for private businesses (n = 6) and government entities (for example Tourism Authority) (n = 4). Most (n = 6) were private tour guides, eco-tour guides, and potters. The respondents' tourism work experience ranged from 4 to 25 years. The interview data were presented in three main themes.

## 4.1.1. Circular Economy Awareness

All respondents were able to express terms and concepts related to circular economy. For instance, an eco-tour guide stated that the definition of (R1) EC "is to keep the natural resources and do our best to protect our environment as it is", or, alternatively, it (R4) "is a type of economy that includes all locals which have micro enterprises". In addition, CE mostly considers social and cultural contexts. A Swiss restaurant owner and manager who has lived in Tunis for about 30 years believed that EC is "keeping the tourist projects (businesses) running and opening other projects; creating new job vacancies; increasing the cleanness of the village; keeping the place traditions and habits". A potter (R6) believed that CE "means sustainable development, as its aim is to use the available resources without harm to the surrounding environment and safeguard resources as well". In the same vein, other respondents believed that CE means that "a business should have a long-term plan, not wasting resources, or causing pollution, and also *benefits the contemporary and future generation" (R7).* For the village context, a respondent (R9) stated that CE should "take into considerations tourism, environmental, sustainability goals, in addition to increasing individuals' income", and, finally, one of the tour guides underlined the role of integration among all stakeholders for effective implementation to suitable goals (e.g., SDGs), claiming that "that economy, which adapts sustainable goals and regulations and consider it as a main driver of the economy".

These findings reveal that respondents were aware that the circular economy is part of the sustainability umbrella concept. They expressed that by their understanding and based on their area and sector of experiences. Many scholars underlined similar terms, for instance, Kaszás et al. [5] clarified that the main elements of CE are resource usage reduction, extended lifetime, recycling, renewal of the natural system, closed-loop flow, economic development, and extraction of waste. Then, she concluded that "circular economy is a form of closed-loop economic development, whose aim is to extend the products' lifetime, enhancing productivity by applying the 4R principle, recycling and emission and waste extraction. It also aims to renew the natural systems, reduce resource usage, generally change the production and consumption systems, and strive for social equity" ([5], p. 69). Moreover, Kaszás et al. [5] argued that the CE concept could be brought to tourism following the 7P principle of service marketing (product, price, place, promotion, people, process, and physical evidence), as it is not only focused on the physical elements that were illustrated in Rodriguez's definition of CE (it "can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling"). We can argue that training on CE provides professionals and habitants with a better understanding.

# 4.1.2. Circular Economy Drivers

All respondents mentioned at least one of the drivers that inspire local business in Tunis Village to adopt CE practices. After clearing the repeated drivers, Table 1 summarizes the main perceived drivers extracted from the interviewees' responses.

The Perceived Drivers to CE in Tunis Village as Rural Tourism Destination				
Theme	Evidence/s (Quotes)			
A. Economic and financial drivers	<ol> <li>"To increase our income since tourism is our primary income source".</li> <li>"To reduce raw material cost".</li> <li>"Using available resources such as solar power to reduce operation cost". **</li> <li>"To create new jobs for residents who will benefit".</li> <li>"To compete with other local competitors (competitiveness)".</li> </ol>			
B. Environmental and sustainability drivers	<ol> <li>"To preserve the nature and environment of the village".</li> <li>"Using available resources such as solar power to reduce operation costs" **</li> </ol>			
C. Cultural preservation and authenticity drivers	1. "Keeping Tunis's authenticity, traditions, and rural atmosphere".			
E. Tourism development and tourists' satisfaction	<ol> <li>"To satisfy and increase the number of visitors to the village".</li> <li>"Enhance provided services".</li> <li>"Keep the village's reputation (rural destination) to keep tourism flow".</li> </ol>			

Table 1. The perceived drivers for Circular Economy.

\*\* This quote fits both economic and environmental themes due to its dual impact.

The results are summarized in Table 1. The perceived drivers of CE in Tunis Village as a rural tourism destination can be categorized into four main themes. The first theme is related to the economic and financial drivers of EC adoption. The results show that CE practices will increase income for businesses and individuals, reduce costs, create new jobs, and ensure economic stability and growth. In addition, by adopting EC practices, a village can enhance its sustainability and attractiveness as a destination, which can lead to increased tourist numbers and higher incomes. Sustainable tourism practices can include reducing waste, improving resource efficiency, and promoting eco-friendly accommodations and activities. Moreover, implementing CE principles can significantly lower raw material costs through recycling, reusing materials, and using local resources. For instance, local artistes/handcrafted pottery makers and other artists can use recycled materials for their crafts, reducing the need for new raw materials. This cost-saving measure not only benefits individual businesses, but also contributes to the overall economic sustainability of the village. Furthermore, adopting CE practices can provide a competitive edge for other local and rural tourism destinations. By positioning itself as a leader in sustainable tourism, Tunis Village can attract tourists who prioritize sustainability. This competitive advantage can be further leveraged through certifications and awards for sustainability, which can enhance the village's visibility and appeal to the global tourism market.

The second theme of drivers of CE adoption is related to environmental and sustainability drivers. Environmental preservation is a core component of a circular economy. In Tunis Village, protecting the natural landscape is essential to maintaining its appeal as a rural tourism destination. Sustainable practices, such as waste management, conservation of water resources, and protection of local flora and fauna, help maintain ecological balance. This preservation not only attracts eco-tourists but also ensures that future generations continue to enjoy and benefit from the village's natural beauty. In addition, the results highlight that utilizing renewable energy sources such as solar power can significantly reduce operational costs for businesses in Tunis. Solar power is abundant in Egypt and can be harnessed to provide clean energy to hotels, restaurants, and other tourism-related businesses. This not only lowers energy bills, but also reduces the carbon footprint of the village, making it a more sustainable and attractive destination for eco-conscious travelers.

The third theme relates to cultural preservation and authenticity. The results reveal that maintaining the authenticity and cultural heritage of Tunis Village is crucial to its identity and appeal as a tourist destination. CE practices that focus on preserving traditional crafts, local customs, and the rural atmosphere can enhance visitor experiences. This includes supporting local artists, promoting traditional building techniques, and organizing cultural events. By estimating and preserving its unique cultural heritage, Tunis Village can differentiate itself from other destinations and attract tourists seeking authentic rural experience.

The final theme of drivers is related to the development of tourism activities and drivers of tourist satisfaction. In this regard, focusing on visitor satisfaction through sustainable practices can lead to increased tourism. By offering a clean, well-maintained environment and high-quality, eco-friendly services, Tunis Village can enhance its reputation and attract more visitors. Satisfied tourists are likely to return to and recommend the destination to others, creating a positive feedback loop that boosts tourism numbers and economic benefits. In addition, preserving a positive reputation as a rural destination is essential for sustaining tourism flow. By implementing CE practices, Tunis Village can showcase its commitment to sustainability, which can enhance its reputation and attract more visitors. This reputation can be bolstered through marketing efforts that highlight the village's sustainable practices, beautiful landscapes, and cultural heritage, thus positioning it as a leading example of sustainable rural tourism. Furthermore, improving the quality of the services offered to tourists is a key driver for adopting CE practices. Enhanced services not only improve visitor experience but also demonstrate a commitment to sustainability, which can attract more discerning and environmentally conscious clientele members.

These drivers of the circular economy in Tunis Village are interrelated and collectively contribute to the sustainable development of the village. By increasing income, reducing costs, preserving the environment, and maintaining cultural authenticity, a village can enhance its appeal as a tourist destination. Moreover, creating new jobs, improving services, and maintaining a positive reputation can attract more visitors and ensure long-term economic benefit. These efforts have also positioned Tunis Village competitively against other destinations, making it a model for sustainable rural tourism in Egypt and beyond.

#### 4.1.3. Barriers to the Circular Economy

All respondents mentioned at least one of the barriers that hinder local businesses in Tunis Village from entirely adopting CE practices. Table 2 summarizes the main perceived obstacles extracted from interviewees' responses.

The results are summarized in Table 2. The perceived barriers to CE in Tunis Village as a rural tourism destination can be categorized into five subgroups. The first barrier is related to the lack of an integrated water sewage system and a poor overall infrastructure. This means that the basic needs for sanitation and waste management were not met. This barrier directly impacts the community's ability to manage resources efficiently and recycle waste, which are essential components of a circular economy. Addressing these infrastructure gaps is necessary to create a foundation for CE practices. According to many studies [45–47], an

effective waste management infrastructure is fundamental to the circular economy, as it allows for the efficient recycling and reuse of resources. In Tunis Village, the absence of such systems hampers sustainable waste management. Consequently, investing in essential infrastructure, such as an integrated water sewage system and other waste management facilities, is crucial to support CE practices in Tunis.

The Perceived Barriers to CE in Tunis Village as Rural Tourism Destination			
Theme	Example of Evidence (Quotes)		
A. Inadequate infrastructure	1."Lack of integrated water sewage system" 2. "Poor infrastructure".		
B. Dearth of knowledge and awareness	<ol> <li>"Lack of awareness and knowledge about CE and sustainable practices".</li> <li>"Lack of tourist awareness regarding sustainability".</li> </ol>		
C. Governmental support & regulation issues	<ol> <li>"Lack of governmental support and following up".</li> <li>"Lack of governmental supervision including services pricing regulations".</li> </ol>		
D. Marketing and Economic Barriers	<ol> <li>"Lack of marketing strategies including festivals and galleries".</li> <li>"Lack of sustainable development economic projects".</li> <li>"Lack of funding".</li> </ol>		
E. Cultural and sustainable concerns	<ol> <li>"Ignoring the rights of the coming generations".</li> <li>" changing the culture and environment of the village, local community who needs to keep their sustainable behaviors over the years to preserve the village".</li> </ol>		

Table 2. The perceived barriers to CE in Tunis Village.

The second barrier is related to the knowledge and awareness of the adoption of CE principles and practices. Without a clear understanding of what a circular economy requires and its benefits, both locals and tourists are less likely to engage in sustainable practices. Educational initiatives and awareness campaigns are required to bridge this gap. By increasing knowledge, the community and visitors can participate more actively in sustainable activities, thereby supporting the overall goals of the CE. The results of this study are in line with the findings of Henao-Hincapié et al. [48], who assessed consumer knowledge, attitudes, and the adoption of circular economy practices in Colombia. They demonstrated that while 77% of respondents had positive attitudes towards CE, only 26% had adequate knowledge of CE and its practices. This can be achieved through cooperation between local entities, such as tourism authorities, and the village's business owners, residents, and visitors.

The third perceived barrier was related to the lack of governmental support and proper regulation required to foster an environment conducive to CE. The absence of consistent governmental support and supervision, including in areas such as service pricing, may reduce the efforts to establish sustainable practices. These findings are in line with those of a previous study by Kandpal et al. [49]. Cherrington et al. [50] emphasized that effective government involvement can provide the necessary resources, oversight, and incentives to ensure the successful implementation and maintenance of CE practices.

The fourth perceived barrier was related to economic factors, and marketing played a significant role in promoting CE. In Tunis Village, the lack of targeted marketing strategies such as festivals and galleries limit the visibility and attractiveness of sustainable practices. This is notable because of the irregularity in holding village festivals, which affects its marketing as a rural tourist destination. Financial support and strategic marketing can drive economic benefits and encourage both locals and tourists to participate in CE. Without sustainable development projects and adequate funding, it is challenging to launch and sustain CE initiatives [51].

The final perceived barrier by respondents was related to cultural factors, and considerations for future generations were also pivotal. The current cultural practices of the local community in Tunis are essential for maintaining sustainability. However, changes that disregard these practices or the rights of future generations can disrupt the balance required for long-term sustainability. Efforts to integrate CE should respect and incorporate local traditions while promoting practices that ensure the well-being of future generations [52].

In sum, by addressing these interconnected barriers with the support of the provided references, Tunis Village can move towards a more sustainable and circular economy, benefiting both the local community and the environment.

#### 4.2. Survey Analysis

## 4.2.1. Respondents' Profile

The survey results reveal that 54% of the respondents were male and 46% were female. This near-gender balance was higher than anticipated, suggesting more inclusive participation from both genders. This indicates that both men and women in Tunis Village are actively engaged in discussions on the circular economy and rural tourism, highlighting the community's collective interest and involvement in sustainable development initiatives. In addition, most respondents were aged between 31 and 40 and older than 40 years (22.8 and 43.9%, respectively). More than three-quarters of the respondents (75.6%) had diplomas and university degrees (38.2 and 37.4%, respectively). Additionally, most respondents were in management roles (owners (43.1%), managers (18.7%), and supervisors (21.1%)). Based on the sector, nearly half of them (49.6%) are potters and hotel owners (32.5%). Finally, most of them (62.6%) had 1–6 years of work experience related to tourism activities.

## 4.2.2. Drivers of CE in Rural Tourism

Table 3 shows the descriptive statistics of the perceived drivers of CE practices in Tunis Village. The results reveal that respondents in general 'agreed' (GM = 4.34, SD = 1.034) on the listed 12 drivers of the implementation CE practices in the village. The agreement level ranged from 'strongly agree' (M = 4.67) on 'To improve relation with local community' to just about 'agree' (M = 3.87) on 'To reduce operational costs'. From the tabulated findings, it is obvious that the top three drivers according to the respondents are to improve the relationship with the local community (M = 4.67), to gain financial benefits (M = 4.51), and to improve the relationship with suppliers (4.46). Surprisingly, a reduction in operational costs (3.87) and improvement in business environmental performance (4.3) were perceived as the lowest drivers of EC application.

Drivers of CE in Tunis	Mean	SD
1. To improve our environmental performance.	4.3	1.21
2. To improve quality of our services.	4.20	1.29
3. To improve our public reputation.	4.30	1.21
4. To satisfy a request from customers.	4.31	1.17
5. To improve relation with local community.	4.67	0.6100
6. To reduce operational costs.	3.87	1.431
7. To have a well-recognized standard.	4.33	0.893
8. To increase our employees' satisfaction.	4.39	0.893
9. To demonstrate our legal compliance.	4.33	0.901
10. To gain financial benefits.	4.51	0.793
11. To keep up with main competitors.	4.41	1.078
12. To improve relations with suppliers.	4.46	0.935

Table 3. The perceived drivers towards CE practices in Tunis.

The findings in Table 3 emphasize the multifaceted benefits of adopting CE practices, aligning with the existing literature that highlights environmental, economic, and social

advantages. The emphasis on improving environmental performance and public reputation reflects the growing importance of sustainability in tourism, as discussed by Ellen MacArthur Foundation [1] and Rodríguez et al. [2]. In addition, high mean scores for community relations and employee satisfaction indicate a strong focus on social sustainability, which is crucial for the long-term success of rural tourism destinations [11]. Financial benefits and cost reductions further highlight the economic incentives for adopting CE, echoing the findings of Martínez et al [10]. These findings are consistent with previous research that highlights the importance of local governance and social networks in rural tourism recovery [53]. Similarly, financial benefits as drivers of CE practices have been noted in the hospitality sector [18].

Moreover, our findings are in line with Sorin and Sivarajah [7], who established that energy consumption, pressure, and waste management costs are among the major drivers of CE in Scandinavian hotel operators. However, the driver improves the relationship with suppliers, which contrasts with Khan et al. [8], who argued in favor of keeping up with leading competitors, improving supplier relations, and satisfying tourism sector associations' requests. This can be justified by Khan et al. [8], which was conducted in three developed counties, while our study was undertaken in rural tourism destinations, where there are many issues for suppliers (e.g., transportation costs). Overall, the drivers identified in Tunis Village align with global trends in CE adoption, emphasizing the importance of sustainability, community engagement, and economic viability in rural tourism contexts.

#### 4.2.3. Barriers to CE

Table 4 displays the descriptive statistics of the perceived barriers to CE practices in Tunis Village. The results reveal that respondents, in general, 'agreed' (GM = 434, SD = 1.26) on the listed 12 barriers to the implementation CE practices in the village. The agreement level ranged from 'agree' (M = 4.33) on 'Poor economic development makes implementation of large-scale sustainability difficult in the village' to almost not 'agree' (M = 3.50) on 'Lack of international alignment and collaboration regarding policies and agreements in the village'. From the tabulated findings, it is obvious that the top three perceived barriers according to the respondents are poor economic development, which makes the implementation of large-scale sustainability difficult in the village (M = 4.33), lack of technology and modern technologies (M = 4.02), and the absence of effective and integrated waste management and recycling systems in the village.

These barriers can be classified at the microenvironmental, macroenvironmental, and organizational levels, as suggested by [10]. This required much effort and support from governmental organizations. In addition, the integration of the tabulated barriers to CE in Tunis Village with the relevant literature underscores the complexity and multifaceted nature of the challenges faced. Addressing these barriers requires coordinated efforts across multiple dimensions including policy alignment, government support, economic development, technological advancement, and education. By leveraging insights from the literature, stakeholders can better understand and mitigate these barriers to foster the successful implementation of CE practices in rural tourism destinations, such as Tunis Village.

The top perceived barriers in Tunis Village are poor economic development, which makes the implementation of large-scale sustainability difficult, a lack of technology and advanced systems, and the absence of effective and integrated waste management and recycling systems. These barriers align with those identified in other contexts, such as the hospitality sector in Indonesia, where infrastructural and educational deficiencies, along with high costs, pose significant challenges [18]. Furthermore, the lack of skilled personnel and inadequate environmental expertise have been highlighted as obstacles to CE practices in the tourism sector [10].

Bar	Barriers to CE		SD
1.	Lack of international alignment and collaboration regarding policies and agreements.	3.50	1.381
2.	Lack of adequate government support such as incentives/funding, training, and legislation	3.67	1.424
3.	Poor economic development makes implementation of large-scale sustainability difficult in the village	4.33	0.929
4.	Low level of awareness of the need for a more sustainable economy	3.80	1.274
5.	Lack of technology and modern technologies	4.02	1.231
6.	Lack of fund	3.85	1.259
7.	Lack of skilled personnel- Lack of experts in the circular economy to lead the transformation process in the village.	3.79	1.230
8.	Lack of exerts on CE to hire and CE training offerings	3.76	1.167
9.	The CE needs a very long time for the transformation process to take place.	3.73	1.287
10.	Lack of places (space) within the village and poor infrastructure practices	3.80	1.391
11.	Lack of information about the various partners and parties in the circular economy	3.91	1.235
12.	There are no effective waste management/recycling systems in the village	3.97	1.349

#### Table 4. The perceived barriers to CE practices in Tunis.

#### 5. Conclusions, Implications, and Further Research

This study contributes to the academic debate on the adoption of CE practices in tourism and hospitality industries. Through a case study, focusing on the major tourism activities (potters, hotels, and restaurants), we approached the CE's drivers and barriers related to environmental, social, and technical issues and connected them with sustainable tourism development in a rural tourism destination. This study demonstrates that the main drivers that motivate tourism SMEs in rural destinations to adopt CE practices are improving their relationships with the local community, as it is the power for the success of any business in the village, increasing the financial benefits of increasing the number of visitors, and improving relationships with suppliers. On the contrary, the main barriers that slowed down the general implementation of green and sustainable practices were poor economic development, making implementation of large-scale sustainability difficult in the village, lack of technology and modern technologies, and the absence of effective and integrated waste management and recycling systems in the village.

Although, the criticized generalizability of a case study's findings can put forward some recommendations based on three levels. First, for professionals and the community, nearly all employees working for tourism activities are Tunis habitants. Thus, they need further cooperation at the business and social levels to improve the implications of green practices to maintain the uniqueness of the village. While conducting this study, due to the lack of support from the governmental, key professionals and habitants called for establishing a non-governmental organization, "Tunis Guards". The main goal of organizing and facilitating teamwork is to improve Tunis.

Second, for policymakers, this study can guide government entities in maximizing drivers and minimizing the influence of barriers. This can be conducted by training professionals and residents on CE practices and related knowledge. Additionally, funds should be raised to establish solar power plants and integrate sustainable waste management for the village.

This study represents one of the first investigations conducted on CE in rural tourism destinations. Future research should consider other rural destinations in Fayoum and Egypt. We considered the main tourism activities, namely, potters, hotels, and restaurants. An in-depth study of potters' CE practices is needed. Owing to the limitations of the case study methodology, a future quantitative study on a wide scale is desirable. Another future line of research could be the development of circular certifications (Green Tourism Certification) for hotels, tourism businesses, and destinations. Finally, observational studies may be more representative of applied and anticipated CE green practices in tourism activities (potters) and destinations.

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