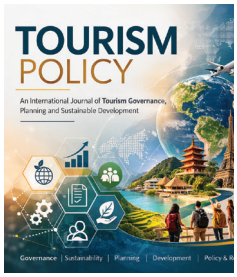

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Circular Tourism Practices, Resource Efficiency Policy, and Environmental Performance: The Moderating Role of Green Technological Readiness

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ABSTRACT

Although the focus on sustainable tourism is increasing, the relationship between the use of circular tourism practices (CTP) and environmental performance (EP) is insufficiently researched. This is the gap that filled by analyzing the effects that CTP has on EP, and the mediating variable is resource efficiency policy (REP) as applied in the tourism industry of Jordan. Based on the data gathered on 225 tourism firms and institutions, the findings show that increased implementation of CTP has a massive positive impact on EP. Further, the results show that CTP positively impacts EP in high green technological readiness (GTR) compared to its low condition. Lastly, it is the REP that is identified to mediate the relationship between CTP and EP, which shows the importance of planned policy mechanisms in ensuring the translation of sustainability practises to measurable outcomes. The results supplement the existing body of research on sustainable tourism, environmental governance, and adoption of technology by incorporating organizational capabilities, policy processes and technological preparedness and giving empirical information on successful execution of circular and resource-efficient approaches in the emerging tourism destinations such as Jordan.

Keywords: Circular Tourism Practices, Resource Efficiency Policy, Environmental Performance, Green Technological Readiness, Sustainable Tourism, Jordan Tourism Sector
JEL Classifications: L83, Q56, O33

1. INTRODUCTION

Tourism has become an important economic and cultural activity in the world and this has provided foreign exchange, employment and socio-cultural exchange. Nevertheless, the fast development of tourism, especially in developing countries like Jordan, has been putting mounting environmental burdens on the environment, such as water shortage, overuse of energy, and waste production (Aftab et al., 2026; Khan et al., 2024). To overcome such challenges, the sustainable and circular solutions are needed to maximise the utilization of resources and reduce environmental consequences. CTP have become recognized as an effective operational policy that combines waste minimization, resource efficiency, and environmentally friendly tourism products (Castillo-Acobo, 2022; Martínez-Falcó et al., 2024). CTP are operational strategies and routines that tourism companies have identified to execute the concepts of the circular economy, such as the minimization, reuse, and recycling of resources and materials in the tourism

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operations (Khan et al., 2023; Bagheri Garbollagh et al., 2026). The choice of CTP as a variable is explained by the fact that it is the practical interpretation of sustainability into the sphere of tourism activities that enables firms to minimise the environmental effects and improve their operations and competitiveness (Elshaer et al., 2025; Zaki and Farrag, 2024).

Resource efficiency policy (REP) is a set of formal institutional and organizational practices aimed at steering, controlling, and implementing resource-efficient tourism activities, such as regulatory frame, internal guidelines, and strategic rules (Khan et al., 2024; Chen and Liu, 2025). REP is an essential part of the system, as it offers both the structural and procedural framework needed to transform circular practises into quantifiable environmental outputs so that there is consistency and adherence to the sustainability goals (Baah et al., 2024). EP can be described as the quantifiable effect of tourism activities on the ecological systems, such as energy and water-saving, better waste management, and environmental compliance (Elshaer et al., 2025; Aftab et al., 2026). The outcome variable is EP, as it is a depiction of the efficiency of the policies of implementing circular practices and resource efficiency, which is the role that a firm plays in sustainable development. GTR is the organisational potential to implement and embrace sustainable and environmental-friendly technologies and digital solutions that increase the implementation of circular practices (Baah et al., 2024; Farrukh Shahzad et al., 2025). GTR can be considered a moderator due to the fact that technological infrastructure and preparedness define the success of circular practices, which allows firms to use innovation to optimise the use of resources and protect the environment (Zaki and Farrag, 2024). The tourism industry in Jordan is one of the most applicable in the study. Tourism is an important part of the Jordanian economy and employment set-up with over 3.3 million international arrivals accounting to 5.6% of the GDP in the year 2022 (Zaki and Farrag, 2024; Duong, 2026). Nonetheless, the presence of large tourist influx in places like Petra, Wadi Rum, and Aqaba puts pressure on water resources, energy use, and the problem of solid wastes (Khan et al., 2023). Such circumstances explain why we chose Jordanian tourism companies and organisations to conduct empirical research since they offer a good environment to empirically research sustainability practises within the context of resource limitation. Although the topic of sustainable tourism and a circular economy gains more and more attention, there are still a few critical gaps that are covered in the existing literature.

The majority of studies about CTP have been focused in Western and Asian settings, and thus the Middle Eastern tourism market (and Jordan, in particular) has not been studied thoroughly (AL Mushattat et al., 2025; Farrukh Shahzad et al., 2025). This disconnection restricts the extrapolation of the previous results to new economies, where the pressures of the environment, the shortage of resources, and the state of governance are significantly different (Elshaer et al., 2025; Bagheri Garbollagh et al., 2026). Although the concept of circular practices enjoys much discourse, the results of CTP and quantifiable EP are still in bits. The processes by which these practices are implemented to achieve tangible ecological results are poorly studied, and such research is needed which would combine operational practises with performance indicators (Martínez-Falcó et al., 2024; Castillo-Acobo, 2022). The meditating capacity of REP between CTP and EP has not been researched extensively. Although previous research recognizes the capacity of policy and regulatory frameworks to advance sustainability outcomes, there is a paucity of empirical research that shows how the formal policy structures can turn the circular practices into a tangible environmental benefit (Khan et al., 2023; Chen and Liu, 2025). GTR, as well as other technological factors, has been given a marginal focus in the tourism sustainability studies. Even though they propose that the use of technology can enhance sustainability impact, limited empirical analyses exist on how the technology mediates the influence of CTP on EP (Zheng et al., 2025; AL Mushattat et al., 2025).

The majority of the previous research takes either operational, policy, or technological aspect in its turn and does not examine how they work together. This compartmentalized methodology does not reflect the dynamic relationships among practises, formalized policy mechanisms and technological infrastructure that together have effects on environmental outcomes (Farrukh Shahzad et al., 2025; Aftab et al., 2026).

The available literature is usually based on Western-centric models and does not provide contextualization of the resource-constrained and emerging economies. Tourism in Jordan is a special case with a water shortage, energy strain and waste management issues in the destination as at Petra and Aqaba, where CTP impact EP with moderate influence of GGR is of importance, thereby creating a unique opportunity to test these relationships empirically, these gaps are relevant to studying the nature of relationships between these two variables without such a study. These gaps beneficial in addressing the gaps in theory, offer practical suggestions to tourism managers and policymakers and further the sustainable tourism research in emerging economies. This study has three aims, namely (1) to determine the impact of CTP on EP, (2) to investigate the mediating role of REP, and (3) to determine the moderating role of GGR. This study combines the theoretical approaches of the Resource-Based View (RBV) (Barney, 1991) and NRBV (Aftab et al., 2026) because both organisational capabilities, policy mechanisms, and technological infrastructure are shown to complement the improvement of EP. This study is important because it is practical and theoretical to sustainable tourism in the emerging economies. The study offers practical implications to tourism managers, policymakers and sustainability champions who aim to minimize the environmental impact but not to impair the operational effectiveness by studying the effects of CTP influence EP via REP as moderated by GGR. The area of interest is the tourism industry in Jordan comprising of hotels, resorts, and heritage sites, which are confronted by environmental issues such as lack of water, energy, and solid waste because of the large numbers of tourists.

The context guarantees practical relevance as well as relevance to other rising economies having similar restrictive environmental conditions. The unique about the study is its quite holistic approach as it combines operational practices (CTP), policy mechanisms (REP), and technological readiness (GTR) at the same time, which has not been explored in earlier literature,

especially in the Middle East tourism settings. The rationale is the great necessity to harmonize the development of tourism and resource sustainability. The UNESCO World Heritage sites of Petra and Wadi Rum in Jordan offer a high stakes context to test the strategies that boost the performance of the environment, yet do not impair the growth of the tourism industry. Lastly, it is tripartite in that (1) it enhances theory by combining the RBV and Natural Resource-Based View (NRBV), showing that organisational capabilities and sustainability-oriented strategies contribute to EP; (2) it empirically applies the mediating role of REP by showing that the moderating effect of GTR exists, and (3) it presents recommendations that can be applied by tourism operators and policymakers in Jordan and other contexts to be able to implement resource-efficient and circular practises effectively.

2. THEORETICAL BACKGROUND

In this research, the RBV and the NRBV are combined to test the impact of CTP on EP by the way of REP and regulated by GGR. According to the RBV, the sustainable competitive advantage is found through the creation of valuable, rare, inimitable and non-substitutable resources and capabilities by the firms (Barney, 1991). CTP as a strategic capability in the tourism context enables companies to operationalise sustainability policy, use resources efficiently and optimise operations. Previous studies have documented that companies that possess high environmental capabilities outcompete their rivals in operational and environmental performance Aftab et al. (2026); Farrukh Shahzad et al. (2025), which validates the idea that CTP can be used as a resource-based strategic advantage in environmental constraint situations. The NRBV builds on RBV, whereas it clearly links organizational capabilities with the environment sustainability and performance results (Castillo-Acobo, 2022). NRBV states that companies which can create capabilities like pollution prevention, product stewardship, and sustainable resource use are in a better position to attain better EP and long-term competitiveness. In the tourism sector, it mean the implementation of a cyclical approach, more resource-efficient processes, and eco-friendly technologies that do not harm the ecological environment but instead reduce the environmental impact and make operations more sustainable (Martínez-Falcó et al., 2024; Duong, 2026). The decision to use NRBV is based on the fact that it gives a theoretical framework to the process of environmental capabilities interacting with policy mechanisms (REP) and technological readiness (GTR) to achieve quantifiable environmental results (Martínez-Falcó et al., 2024).

The use of RBV and NRBV in explaining the impact of environmental and sustainability practises on firm performance is supported by previous research. Indicatively, Castillo-Acobo (2022) and Zaki and Farrag (2024) discovered that sustainability-related capabilities have a positive effect on environmental and operational success. On the same note, Bagheri Garbollagh et al. (2026) established that technological readiness enhances the connexion among eco-innovation and environmental results, which underscores the applicability of GTR as a mediator. Khan et al. (2024) and Zaki and Farrag (2024) focused on the idea that firms that combine sustainable operation practises with policy compliance have a superior EP and that formalised policies are vital in terms of converting capabilities into outcomes (Elshaer et al., 2025). All these studies help in affirming the conceptual model of this study through demonstrating that operation, policy, and technological capabilities inter-relate to promote EP. The RBV and NRBV theoretical integration offers a logical basis of explaining the suggested mediating and moderating relationships. RBV explains what makes CTP very important organisational capabilities that lead to competitive advantage whereas NRBV clarifies how the capabilities become EP when integrated with policy mechanisms and technological preparedness. REP is an operationalization of CTP into measurable outcomes that can be operationalized into the use of structural and procedural conduit. Farrukh Shahzad et al. (2025); Martínez-Falcó et al. (2024), and GTR has a higher effectiveness of these capabilities through technological support and innovation (Aftab et al., 2026). Overall, the scope of the RBV-NRBV theoretical lens enables this study not only to describe the direct influence of CTP on EP but also the condition processes, encompassing REP and GTR. By finding the intersection of these theories, the research fills a core gap in the literature on tourism sustainability by looking at the combined impact of operational practises, policy mechanisms, and technological preparedness on the environmental impacts of the emerging economies like Jordan. This theoretical framework gives a good explanation of the hypotheses proposed and general conceptual framework.

2.1. Circular Tourism Practices and Environmental Performance

CTP are business approaches used by tourism companies to realize the principles of the circular economy, such as the reduction of resources, their reuse, recycling, and the provision of environmentally friendly services (Zaki and Farrag, 2024). Theoretically, the RBV explains that companies can achieve competitive advantage through the creation of valuable, rare, and inimitable resources, such as operational capabilities that create efficiency and sustainability (Khan et al., 2023). CTP is one of such strategic capabilities, and it enables tourism companies to maximise material flows, minimise waste, and improve environmental responsibility without decreasing the quality of services and customer satisfaction (Chen and Liu, 2025; Farrukh Shahzad et al., 2025). This argument is furthered by the NRBV that highlights that companies which attain environmental excellence using strategic capability are in a better position to perform over the long run and maintain ecological stability (Hart, 1995). Empirical research conducted before indicates that companies that have adopted a circular and resource-efficient approach report significant changes in energy consumption, water use, and solid waste, which directly improves EP (Zheng et al., 2025; Baah et al., 2024). When it comes to tourism, the implementation of CTP is essential in places with high tourist numbers and limited water resources like Jordan as well as due to the presence of water and energy resources under pressure in tourist destinations (Petra and Aqaba) (Aftab et al., 2026; Farrukh Shahzad et al., 2025). Hotels, resorts, and heritage sites operators proved that circular strategies have a direct positive impact on the sustainability of operations and ecological performance, which confirm the favourable effect on EP (Castillo-Acobo, 2022; Zaki and Farrag, 2024). Through

these theoretical underpinnings and evidence, the subsequent hypothesis was followed.

H_1: CTP are positively related to EP.

2.2. Moderating Role of Green Technological Readiness

GTR is the ability of tourism organisations to implement and utilize green technologies, digital, and eco-innovations that improve the efficiency and sustainability performance (Elshaer et al., 2025; Martínez-Falcó et al., 2024). Although CTP offer operational potentials to make efficient utilisation of resources, the success of such practices to enhance the EP is largely defined by technological preparedness in the firm. According to the RBV, technological capabilities are also considered valuable and inimitable resources that augment the benefits of operational strategies (Castillo-Acobo, 2022; Khan et al., 2024). The bigger the GTR, the more a company is able to employ such a circular strategy as energy management with smart tools, waste management, and water recycling systems, and achieve better environmental results (Martínez-Falcó et al., 2024; AL Mushattat et al., 2025). The NRBV goes on to indicate that companies that can incorporate environmental technology into their resource base have a better chance of attaining both long-run ecological and competitive advantage (Duong, 2026; Zaki and Farrag, 2024). According to previous research, the implementation of green technologies enhances the effectiveness of sustainability-related practises in environmental and operational performance of hospitality and tourism industries (Baah et al., 2024; Elshaer et al., 2025). In destinations such as Jordan that are resource-constrained, with water shortage and energy pressure as major issues, technologically advanced measures enable firms to run CTP in a more efficient way that reduces the burden on the environment (Aftab et al., 2026; Farrukh Shahzad et al., 2025). Through these theoretical and empirical findings, hypothesis of the following formulations is followed.

H_2: The positive relationship between CTP and EP is stronger when GTR is high than when it is low.

2.3. Mediating Role of Resource Efficiency Policy

REP is formal strategies, policies, and rules taken by tourism companies or required by authorities to utilise the resources better, minimize wastes and encourage sustainable operations (Khan et al., 2023; Bagheri Garbollagh et al., 2026). Although CTP offer the operational capacities to reduce environmental effects, transformation of the practices into quantifiable EP frequently needs to be supported by policies in a more formal manner. The NRBV assumes that the organisational capabilities produce the best sustainability results when instilled in formalised processes that help direct resource utilisation and operational choices (Castillo-Acobo, 2022; Zaki and Farrag, 2024). REP is this structural conduit, which guarantees the normal application of circular practises and upscale operations constantly (Elshaer et al., 2025). Empirical research suggests that policy frameworks are major mediators of the success of sustainability efforts. As an example, Zheng et al. (2025) and Baah et al. (2024) show that operational practises that are eco-friendly when undertaken by tourism firms lead to positive environmental consequences when they have well-defined environmental policies and a set of rules to follow. Equally, Duong (2026) and Khan et al. (2024) demonstrate that policy instruments lead to increased efficiency in the use of resources, supplement uptake of environmentally friendly technologies, and internalise environmentally friendly practices in companies. With water shortage, energy restriction, and solid waste management being the direst of problems in the Jordanian tourism setting, REP offers the required regulatory and organizational framework to transform circular tourism activities into a viable environmental resource (Castillo-Acobo, 2022; Zaki and Farrag, 2024). Thus, Following hypothesis developed.

H_3: REP mediates the relationship between CTP and EP.

3. METHODS AND DATA

3.1. Sample and Data Collection Procedure

The data was gathered in the database of the Jordan Tourism Business Directory. These criteria were followed in our sample: (1) the company should be defined as an independent tourism operator with no affiliation to any group or a chain; (2) the company must be owned and controlled by the entrepreneur(s) or the team of entrepreneurs; (3) the company should offer tourism services, such as hotels, resorts, and heritage site operators; (4) the company must be founded in 2010 or later; (5) the number of employees in the company should be <300 by January 01, 2026. The database had 18,500 tourism firms, but the number was 650 random samples that were picked. We have targeted tourism companies because they are the biggest agents behind the economic and environmental sustainability agenda of Jordan (AL Mushattat et al., 2025). Data was collected in the two waves, where one wave of data collection was done through a questionnaire that was given face-to-face, and all data about the independent and control variables was collected in the first wave (T1) and the dependent variable collected 6 months later in the second wave (T2). A survey measuring CTP, GGR and REP was administered to the 650 general managers of sampled firms in person in January 2026. The responses from 248 firms were obtained after a number of visits to the head offices. In order to minimise possible issues related to the use of a single informant and a widespread method bias (Podsakoff et al., 2012), we separated the measurement of the independent variable and the moderating variable with the dependent variable by 6 months. In this regard, the second questionnaire was administered face-to-face to the operation managers of the 248 companies in order to determine the level of their EP. We got 245- completed surveys. The resultant response rate of 36.9% gave us 240 matched responses after discounting the missing values. The sample has a mean age = 9.12 (SD = 3.45) years and mean size = 15.22 (SD = 12.11) full time employees. To compare the nonresponse bias, the early and late responses were compared and it was assumed that late responses are closer to nonresponses (Bagheri Garbollagh et al., 2026). Applying Pearson chi-square test to categorical variables, Khan et al., (2023) have revealed that there was no significant difference between early and late respondents based on the firm age, firm size and industry type. Therefore, the issue of nonresponse bias is not discussed as a significant threat to our findings.

3.2. Measures

With the exception that we were given a seven-item scale with anchors that were 1 = strongly disagree to 7 = strongly agree.

Table 1 shows the specific items, validity and reliability of constructs of the study.

3.2.1. Circular tourism practises (CTP)

We used five items of Baah et al. (2024) and (Khan et al., 2024) to measure CTP. The items focus on the aspects that the tourism companies can use to embrace the concept of the circular economy in their processes, such as waste management, cycling, and services that are resource-efficient.

3.2.2. Green technological readiness (GTR)

We have used Elshaer et al. (2025) and Zaki and Farrag (2024) to measure GTR with the help of six items that determine the level of integration of environmentally friendly technologies and smart solutions in the work of tourism firms.

3.2.3. Resource efficiency policy (REP)

The six measures of the questionnaire to measure the REP were designed in this study (Castillo-Acobo, 2022; Khan et al., 2023). We used the findings of the large literature review and interviewed 15 Jordanian tourism firm managers, and obtained seven items that best represent the policy mechanisms that sustain the use of resources. EFA with direct oblimin rotation was done with one factor specified on the REP scale. Cross-loadings resulted in the deletion of one item. Oblimin rotation permitted each item to load freely on various factors, which brings its actual effect.

3.2.4. Environmental performance (EP)

The operational managers were requested to make comparisons between the reduction in energy use, water consumption, waste, adoption of environmentally friendly service practices, and general EP of their firms against industry competitors (AL Mushattat et al., 2025). The fact that perceptual performance measures are used is favourable since the perceptions of managers about environmental success have serious operational and strategic consequences (Duong, 2026).

3.3. Control Variables

We adjusted the firm size, firm age, tourism investment, and industry type. The measure of firm size and firm age was recorded as the number of full time employees and the number of years during which the firm had been in existence respectively. The size of the firm and its age was the controlled factor since bigger and older tourism firms are better equipped to adopt circular practises, as well as green technologies, that might lead to greater EP (Bagheri Garbollagh et al., 2026). The percentage of total revenues on the implementation of circular and sustainable practises was taken as the measure of tourism investment (Farrukh Shahzad et al., 2025). Tourism investment was also accounted due to the fact that companies that are investing more on the sustainable endeavours have higher chances of realizing high EP. Lastly, we included industry dummy which was taken as 0 = low-intensity tourism; 1 = high-intensity tourism. The reason behind industry being controlled was that high-intensity tourism firms prefer more to involve themselves in resource efficiency initiatives that may have more significant EP impacts (Zaki and Farrag, 2024).

3.4. Common Method Bias, Validity, and Reliability Assessment

To establish the possibility of common method variance affecting our data, we used two major procedures. To begin with, we used the approach of Farrukh Shahzad et al. (2025) and found an item (i.e., I like blue logos) of which the conceptual relationship with each of the constructs employed in our research is absent. We noted no significant correlations between −0.01 and 0.01. Second, we used the strategy of Podsakoff et al. (2012) and had one common latent factor in the model. The results of the model without a common method factor were the following: $\chi^2/df = 1.19$, CFI = 0.94, RMSEA = 0.05, and TLI = 0.96, whereas the results of the model including a common method factor were the following: $\chi^2/df = 1.15$, CFI = 0.95, RMSEA = 0.06, and TLI = 0.97. In the comparison of the two models, the outcomes revealed that the path coefficients of the main model remained the same as the model without a common method factor was included. Moreover, the items loaded better on the respective constructs compared to the latent common method factor. We are sure that our findings are not influenced significantly by common method bias. After that, the reliability and validity of the measures were evaluated using Cronbachs alpha, average variance extracted (AVE), and composite reliability (CR). As mentioned in the previous part of the paper, Cronbach alpha and CR exceeded the recommended cut-off level of 0.70 in all measures (Fornell and Larker, 1981).

Table 1: Measures and results of validity tests

Construct	α	CR	AVE	HSV	Items and Loadings
CTP	0.89	0.90	0.76	0.19	Our firm implements circular tourism operations 0.77 (1.00); Each year we adopt eco-friendly service solutions 0.767 (11.98); Industry experts note our efficient resource management 0.90 (15.22); Our operations offer solutions for environmental sustainability 0.83 (14.77); We integrate circular strategies into our tourism services 0.79 (13.33); We are effective in reducing resource use in meaningful ways 0.77 (12.56)
GTR	0.80	0.80	0.56	0.12	We invest in eco-friendly technologies 0.75 (1.00); We adopt smart energy management systems 0.85 (16.77); We implement water-saving technologies 0.88 (17.34); We use technology to minimize waste 0.87 (16.76); We integrate digital solutions for resource efficiency 0.90 (18.56); Our technological systems support environmental goals 0.92 (19.23)
REP	0.79	0.80	0.58	0.11	We follow formal policies for resource efficiency 0.88 (1.00); We encourage staff to comply with sustainability guidelines 0.72 (13.22); We monitor resource use in operations 0.91 (19.23); We implement policies to improve waste management 0.86 (18.34); Policies ensure cleaner and sustainable operations 0.84 (17.04)
EP	0.88	0.89	0.74	0.16	Reduction in energy use 0.93 (1.00); Reduction in water consumption 0.92 (24.66); Reduction in waste 0.91 (23.23); Adoption of eco-friendly practices 0.88 (19.34); Overall environmental performance 0.86 (18.67)

t-values are shown in parentheses. r=reverse coded. AVE: Average variance extracted, CR: Construct reliability, HSV: Highest shared variance with other constructs

The CR values were all significantly above 0.60, the value that is regarded as supporting convergent validity (Baah et al., 2024). To determine the discriminant validity, a series of comparison tests were run to study the differences in chi-square of the main model with a series of restricted models. The findings proved that both the models are different. We also were using the method proposed by Fornell and Larcker (1981) to determine the discriminant validity. Therefore, we checked that AVE was greater than maximum shared variance (HSV) between pairs of constructs. Findings indicate that in every case, AVE of each construct was higher than that of the HSV between any two constructs indicating the discriminant validity of our constructs.

4. RESULTS

4.1. Analytical Procedure and Findings

Table 2 shows the descriptive statistics and the correlation of the variables. To reduce the risk of multicollinearity, the mean centred the variables of the interaction (Martínez-Falcó et al., 2024). The biggest value of variance inflation factor (VIF) of the regression models was 3.21, and it can be implied that the multicollinearity is not a significant issue in our research (Castillo-Acobo, 2022). The hypotheses were tested with the help of the hierarchical regression. The results of the regression are given in Table 3. The dependent variable in Models 1-4 is REP. All the control variables are contained in Model 1. Model 2 contains CTP, and the outcome in Model 2 indicates that CTP plays a huge role in REP ($\beta = 31$, $P < 0.01$). H_1 is supported with this finding. Once CTP was replaced by GGR in the regression equation into the model, CTP did not have any impact on REP ($\beta = 0.29$, $P < 0.01$). Model 4 included the interaction term between CTP and GTR. In Figure 1 and Model 4 the interaction result is positive and significant ($\beta = 0.38$, $P < 0.01$) indicating that the effect of CTP on REP is more pronounced when GTR is high as compared to when it is low. H_2 is supported by this finding. The dependent variable (EP) is used in Models 58. Model 58 are tests of the mediating hypothesis of REP. The mediating hypothesis was addressed by using the steps suggested by (Khan et al., 2024). To begin with, there should be significant relationship between the independent variable and the mediating variable. CTP (independent variable) is positively and significantly correlated with REP (mediating variable) ($\beta = 31$, $P < 0.01$) as seen in Model 2 above. Second, the mediating variable and the dependent variable must be related significantly. According to Model 7, the result indicates that REP has a positive correlation with EP ($\beta = 7.36$, $P < 0.01$). Third, the effect of independent variable on the dependent variable must be nonsignificant or weaker where the mediating variable is present in the regression equation. Model 7 indicates that with CTP and REP

Table 2: Descriptive statistics and correlations

Variables	1	2	3	4	5	6	7	8
Firm size (employees)								
Firm age (years)	0.06							
Tourism investment	0.08	0.17*						
Industry type	−0.01	0.06	0.09					
GTR	−0.14*	−0.06	0.09	0.00				
CTP	0.03	0.11	0.02	−0.01	0.19**			
REP	0.11	0.10	0.07	0.25**	0.14*	0.25**		
EP	−0.12	−0.14	0.09	0.12	0.14*	0.33**	0.35**	
Mean	13.55	8.65	1.49	0.46	4.60	4.45	4.66	4.56
Standard deviation	11.46	3.00	1.37	0.39	0.77	1.04	0.99	1.01

P<0.05. **P<0.01

Table 3: Regression results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Dependent variable	REP	REP	REP	REP	EP	EP	EP	EP
Control variables								
Firm size	0.11*	0.09*	0.08*	0.05	−0.12**	−0.11**	−0.10*	−0.10*
Firm age	0.09*	0.06	0.05	0.05	−0.10*	−0.10*	−0.11*	−0.11*
Industry type	0.17***	0.15***	0.14***	0.14***	0.05	0.04	0.04	0.04
Innovation spending	0.03	0.02	0.02	0.02	0.06	0.05	0.04	0.05
Independent variable								
CTP		0.31***	0.29***	0.29***		0.05	0.06	0.04
Moderator								
GTR			0.16**	0.14**	0.12*	0.11*	0.11*	0.10*
Interaction								
CTP×GTR				0.38***				0.32***
Mediator								
REP							0.36***	0.34***
Model fit								
F-value	1.72	4.12***	5.48***	6.01***	1.61	3.88***	5.44***	6.52***
R^2	0.08	0.12	0.14	0.17	0.10	0.13	0.15	0.18
ΔR^2	—	0.04	0.02	0.03	—	0.03	0.02	0.03
Largest VIF	1.88	2.94	1.69	1.75	1.66	2.01	2.41	3.21

Standardized coefficients are reported

incorporated into the equation, REP had a positive relationship with EP ($\beta = 0.36$, $P < 0.01$). Nonetheless, the effect of CTP on EP is insignificant ($\beta = 0.06$, ns). These results imply that there is a mediating effect of CTP and EP by REP. Thus, H_3 is supported. In order to examine the validity of the moderation hypothesis, we examined the conditional indirect impact of CTP on EP (through REP) at levels of GTR, with the aid of PROCESS macro (Aftab et al., 2026). As such, GTR was established at big and small levels at one standard deviation above and below the mean score. Table 4 results indicate that the indirect effect of CTP on EP via REP was contingent on the degree of GTR. The findings indicate that the indirect effect was greater (0.07) and significant at high level of GTR (CI ranging between 0.05 and 0.15) but was inferior (0.00) and insignificant at low level of GTR (CI between 0.03 and 0.06). Therefore, H_3 was confirmed.

4.2. Robustness Tests

Other analyses were done to determine the strength of the findings. To begin with, the hierarchical regression test that was carried out to test the hypotheses was repeatedly estimated using randomly selected subsets of the sampled firms between 90% of the sample and 50% of the sample (Castillo-Acobo, 2022). All the outcomes concerning Hypotheses 1-3 continued to have statistical approval of $P < 0.05$ or above, which showed that the results were representing sound associations in the data collection. Secondly, we re-modelled our model using sustainability-based financial performance as a dependent variable. Financial performance was measured using three items (i.e., return on investment, operational efficiency and profit growth). The findings were found to validate above findings of all the hypotheses of financial performance as dependent variable.

5. DISCUSSION AND IMPLICATIONS

This paper aimed to investigate the impact of CTP on EP of tourism companies in Jordan taking into consideration the mediating effect of REP and the modulating effect of GGR. We have found that CTP exerts a significant and direct positive influence on EP which proves H_1. The finding is consistent with previous reports that operational plans that are sustainable like circular resource use are essential in enhancing environmental performance (Zheng et al., 2025; Chen and Liu, 2025). Circular practices in the Jordanian context, where tourism makes a significant contribution to the GDP (Farrukh Shahzad et al., 2025), can enable the firms to streamline the flow of resources, reduce the amounts of waste, and increase the ecological sustainability of the industry in the long run, which in turn will improve the competitive position of the ecologically responsible firms. These results also resonate with the RBV view that internal resources and strategic resource allocation directly affect the results of the firms (Zaki et al., 2024; Bagheri Garbollagh et al., 2026). H_2 that CTP and EP have a stronger positive relation in high levels of GTR was also supported. The CTP-GTR interaction proves that the environmental positive impacts of circular tourism are increased when the firms have highly developed green technological infrastructure. This result is aligned with the previous studies that highlighted the importance of technology as one of the key facilitators of sustainable practises (Khan et al., 2023; AL Mushattat et al., 2025). The firms that have higher GTR can track resource uses more effectively, deploy more energy-efficient strategies, and improve waste reduction strategies, enhancing the influence of the so-called circular practises on EP (Elshaer et al., 2025; Martínez-Falcó et al., 2024). Interestingly, this result is somewhat opposite to the studies in less technology-based tourism setting, Aftab et al. (2026), which indicated that the Jordanian industry is better off introducing green technologies into its circular systems. The mediation of the role of REP was confirmed and H_3 was valid. REP is a process by which CTP promotes EP. This mediation points out the idea that it is not enough to implement the circular practices, but firms should institutionalize the environmental policies that would control the resource efficiency (Duong, 2026; Martínez-Falcó et al., 2024).

Our results are aligning with previous reports that prove that policy frameworks mediate the effectiveness of sustainability initiatives by giving it a format, accountability, and monitoring systems (Chen and Liu, 2025; Khan et al., 2023). In the context of the Jordanian tourism sector, where environmental factors like water shortage and energy constraints exist Zaki and Farrag (2024), the application of the REP concept ensure that the circle of activities that are initiated in terms of the strategy is translated into tangible outcomes as far as the environment is concerned, and the mechanism of performance is affirmed. The strength tests also enable the stability of relations that are identified. Although the subsampling and alternative financial performance measures were done, the positive correlations between CTP, REP, GWR and EP remained significant, and points out to the generalizability of the results in the contexts of tourism in Jordan. This consistency

Figure 1: Interaction of circular tourism practices, and green technological readiness on environmental performance

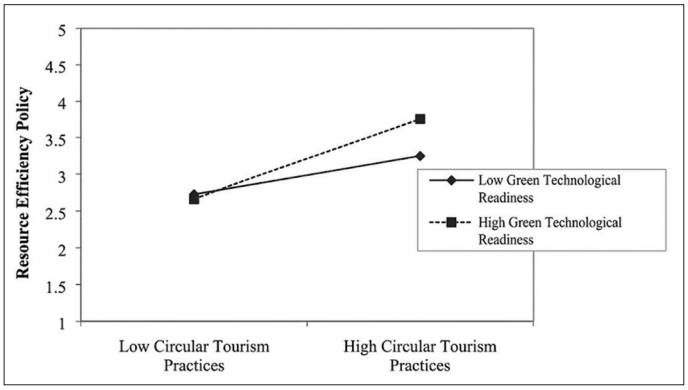

Table 4: Conditional indirect effects at values of GTR (moderator)

Moderator	EP	Level	Conditional indirect effect	SE	LL 95% CI	UL 95% CI
GTR	Low (−1.09)	−0.01	0.04	−0.02	0.07	
GTR	High (1.09)	0.05	0.03	0.04	0.13	

Results are based on 10,000 bootstrap sample

is in line with previous multi-industry studies on the adoption of circular economy, which have reported stability in a series of reported environmental positive impacts in different organisational sizes and technological capacities (Baah et al., 2024; Elshaer et al., 2025). Besides, the effect of strong interaction supports the idea that the technological preparedness is not only an enabler but a pivotal contingency that enhances the efficiency of sustainable practises (Farrukh Shahzad et al., 2025; Zheng et al., 2025). Also, the research finds out that CTP and REP initiatives of Jordanian tourism firms are not a void enterprise, but they dynamically engage with internal capabilities (RBV) and external technological enablers (dynamic capabilities perspective) to generate compounded environmental benefits (Khan et al., 2023). The presented integrative view is a part of the current discussion of sustainability in service-oriented industries, which has been accused of not being empirically based (Bagheri Garbollagh et al., 2026; Khan et al., 2024).

Importantly, another observation made in our research is similar differences in the nuance of differences in previous work in manufacturing and high-tech industries, which highlights the significance of context-specific research on tourism-based circular economies (Aftab et al., 2026; Elshaer et al., 2025). Overall, the results have good empirical justification to the theoretical expectation that CTP boosts EP, both directly and indirectly through REP, the effect of which is enhanced by GGR. They emphasize the essential interaction between the operational practises, policy institutionalisation, and technological capabilities in the environmental outcomes in the Jordanian tourism. Amalgamation of principles of the circular economy with firm-specific advantages and technological preparedness makes the study to give an adequate storey that connects strategy, mediating, and moderating, thus creating a systematic and looped view of EP dynamics.

5.1. Theoretical Contributions

The present study is significant in making theoretical contributions by combining the RBV and the NRBV to describe the mechanisms by which CTP improve EP. To begin with, regarding the RBV point of view, the research adds to the focus that internal capabilities of firms, i.e. efficient resource use, waste minimization tactics, and circular operations, form valuable, rare, and inimitable resources that can bring about sustainable competitive advantage. The empirical support of the study on the RBV suggestion that the best results are produced by strategic utilisation of distinct organizational strengths proves that CTP is directly related to EP. Second, the research expands the NRBV by demonstrating that environmental capabilities, in this case, REP, are mediators, which convert sustainable practices into quantifiable environmental outcomes. REP also makes sure that circular initiatives are institutionalized in organizational processes, which is in line with the NRBV assumptions that ecological strategies lead to improvement in the performance of firms. Moreover, the moderating effect of GTR shows that endsowments of technology enhance the strategic worth of environmentally oriented capabilities and, therefore, offers a more detailed concept of dynamic capabilities to the sustainability research. This research provides an empirical contribution to the theoretical gap by incorporating RBV and NRBV in the Jordanian tourism into the context of EP in terms of internal policies and technological preparedness. The results support and supplement previous sustainability literature Aftab et al. (2026); Martínez-Falcó et al. (2024), and provide a consistent framework that correlates strategic resources, environmental policies and technological enablers with environmental results.

5.2. Practical Implications

The results of this work have a number of practical implications on managers and policymakers working in the tourism industry. To begin with, tourism companies that have resources constraints just like Jordan should consider using CTP so as to have maximum use of resources, minimise waste, and enhance EP. Operational sustainability can be attained by making firms profitable and implementing circular process, i.e., material reuse, energy efficiency and sustainable service design. Second, the mediating position of REP brings out the need to institutionalize the circular efforts using structured environmental policies. The managers ought to create, broadcast, and implement policies that would incorporate the sustainable practices, so that resource efficiency becomes a part of the corporate culture and not a random exercise. These policies help in monitoring, accountability and consistency of environmental outcomes in the long run. Third, the moderating impact of GTR highlights the fact that the incentives of the circularity of practices are multiplied by investing in green technologies, including renewable energy systems, energy-efficient equipment, and digital monitoring tools. Companies that have greater technological preparedness have an opportunity to use data-driven decision-making and automation to maximize resource effectiveness, which improves EP. Lastly, the adoption of a circular economy can be encouraged through incentives given by the policymakers either in the form of financial aid, regulation or technological infrastructure specific to tourism companies. Through these interventions firms can be encouraged to put CTP and REP into place in a systematic manner and achieve a more sustainable and greener tourism industry to meet national environmental and economic objectives.

6. CONCLUSION

The research provides a step forward in the conceptualization of the relationship between CTP and EP among Jordanian tourism companies by analysing the mediating value of REP and the moderating value of GGR. The results confirm that CTP is positively influencing the EP, and sustainable operation strategies should be employed in the resource-constrained situations. Furthermore, REP is a facilitative process, where circular initiatives are translated into quantifiable EP, which is aligns with the NRBV. The mediation of GTR also emphasises the importance of technological competences in making the practice of the circularity more effective. The more prepared firms are able to adopt superior monitoring, automation, and resource management systems, which enhances the ecological value of the circular initiatives. Combined, CTP, REP, and GTR represent a comprehensive model that proves the idea that strategic resources, policy institutionalization, and technological enablers are combined to achieve sustainable performance. In real-life application, the research offers practical advice to the managers,

including the introduction of circular processes, the establishment of resource efficiency policies, and the financial investments into green technologies. It is advisory that policymakers should develop favourable infrastructure and stimuli to encourage the use of sustainability in tourism. In general, the research adds a theoretical value to the body of literature in the RBV perspective by integrating the views of NRBV and empirically verifies the ways in which the implementation of circular practices can produce better environmental results. It also fills in some of the gaps in the contexts by concentrating on the case of Jordanian tourism, which can be used as a model to guide the strategic decisions and sustainable development initiatives in other emerging economies. These combined results support the idea that environmental sustainability can be realized with the help of intentional use of capabilities, policy models, and technological preparedness.

6.1. Limitations and Future Research Directions

Regardless of the contributions of the study, there are a number of limitations that should be mentioned. To begin with, the research is conducted only on tourism companies in Jordan and this can be detrimental to the generalization of the results to other sectors or countries with other regulatory, technological, or cultural settings. The model can also be duplicated in other sectors in future research to determine cross-industry validity in manufacturing or hospitality because the model was conducted in the Middle East. Second, the self-reported surveys used to collect the data could bring about bias, although there was time lapse and strong common method bias tests. The future research might combine objective EP measures, including energy use, carbon footprint, or waste minimization data, with perceptual ones. Third, this research factored in on REP as the only mediating variable and GTR as the only moderating variable. The relationship between CTP-EP may also be impacted by other possible mechanisms, including organisational learning, stakeholder collaboration, or green innovation culture. The study could have a multi-mediator or multi-moderator type because such a design would allow a more detailed view of the causal pathways in the future. Lastly, the study had a cross-sectional two-wave design. Although temporal distance lowers the chances of bias, longitudinal studies are advised to make causal inferences and examine how practices that are circular change over time. A longitudinal analysis of the effects of CTP and REP on the environmental and financial performance would improve the strategic decision-making and policy development in sustainable tourism.

REFERENCES

Aftab, J., Wei, F., Abid, N., Kiran, A., Aftab, F. (2026), From CSR to environmental gains: Examining the roles of AI change readiness, green entrepreneurial orientation, intellectual capital and value co-creation. Journal of Intellectual Capital, 1-36.

AL Mushattat, M.A.J., Al-Sulaiti, K., Al Halbusi, H., Alhitmi, H.K., Al-Sulaiti, I. (2025), Investigating innovative tourism and hospitality sustainability modeling the moderating roles of mobile information technology and green human resource management. Discover Sustainability, 6(1), 1064.

Baah, C., Rijal, A., Agyabeng-Mensah, Y., Afum, E., Acquah, I.S.K. (2024), Does circular economy entrepreneurship drive technical capabilities for circular economy performance? The moderating role of environmental dynamism. Management of Environmental Quality: An International Journal, 35(3), 567-586.

Bagheri Garbollagh, H., Alimardani, S., Jabbarpour Moghaddam, H. (2026), The impact of the green Internet of Things on hotel environmental performance: Does green digital learning help? Journal of Hospitality and Tourism Technology, 1-21. https://doi.org/10.1108/JHTT-09-2024-0610

Barney, J. (1991), Firm resources and sustained competitive advantage. Journal of Management, 17(1), 99-120.

Castillo-Acobo, R.Y., Cano, Y.D.P.Y.F., Paricahua, A.K.P., Íñiguez-Ayón, Y.P., León, C.R.R., Mohamed, M.M.H., & Gonzáles, J.L.A. (2022). The role of innovation adoption and circular economy readiness on the environmental sustainability: Moderating impact of organizational support. AgBioForum, 24(2), 226-235.

Chen, T., Liu, G. (2025), Global perspectives on environmental policy innovations: Driving green tourism and consumer behavior in circular economy. Journal of Environmental Management, 374, 124138.

Duong, C.D. (2026), Green transition, circular economy practices and sustainable performance: The curvilinear role of digital platform capabilities. Journal of Enterprise Information Management, 1-24. https://doi.org/10.1108/JEIM-10-2025-0969

Elshaer, I.A., Azazz, A.M., Alyahya, M., Fayyad, S., Aboutaleb, M., Mohammad, A.A. (2025), Driving sustainability performance in hotels through green digital leadership and circular economy: The moderating role of hotel green efficacy. Systems, 13(6), 415.

Farrukh Shahzad, M., Liu, H., Zahid, H. (2025), Industry 4.0 technologies and sustainable performance: Do green supply chain collaboration, circular economy practices, technological readiness and environmental dynamism matter? Journal of Manufacturing Technology Management, 36(1), 1-22.

Fornell, C., Larcker, D.F. (1981), Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18(1), 39-50.

Hart, S.L. (1995), A natural-resource-based view of the firm. Academy of Management Review, 20(4), 986-1014.

Khan, O., Bellini, N., Daddi, T., Iraldo, F. (2023), Effects of behavioral intention and dynamic capabilities on circular economy adoption and performance of tourism SMEs. Journal of Sustainable Tourism, 31(8), 1777-1796.

Khan, S.A.R., Ahmad, Z., Sheikh, A.A., Yu, Z. (2024), Green technology adoption paving the way toward sustainable performance in circular economy: A case of Pakistani small and medium enterprises. International Journal of Innovation Science, 16(5), 801-822.

Martínez-Falcó, J., Marco-Lajara, B., Zaragoza-Sáez, P.D.C., Millan-Tudela, L.A. (2024), Do circular economy practices moderate the wine tourism–green performance relationship? A structural analysis applied to the Spanish wine industry. British Food Journal, 126(1), 134-155.

Podsakoff, P.M., MacKenzie, S.B., Podsakoff, N.P. (2012), Sources of method bias in social science research and recommendations on how to control it. Annual Review of Psychology, 63(1), 539-569.

Zaki, K., Farrag, M. (2024), The impact of circular economy on environmental performance in the tourism and hospitality industry: The role of low-carbon behavior and eco-friendly behavior. The International Journal of Tourism and Hospitality Studies, 7(2), 285-304.

Zheng, D., Wei, B., Waris, I., Bhutto, M.Y. (2025), Adoption of AI-powered technologies for food upcycling in green hotels: A technology-organization-environment and natural resource-based view perspective. British Food Journal, 1-22.