

UNLEASHING SUSTAINABLE ENTREPRENEURSHIP: THE NEXUS OF CIRCULAR ECONOMY, SUSTAINABLE TOURISM, AND DIGITALIZATION: EVIDENCE FROM SAUDI ARABIA

Majed Bin Othayman^{1*}

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¹ King Khalid University, Saudi Arabia

***Corresponding Author:**
Majed Bin Othayman

Email:
malothayman@kku.edu.sa

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ABSTRACT

This study investigates the effects of the circular economy and sustainable tourism on sustainable entrepreneurship in Saudi Arabia, with digitalisation examined as a moderating factor. A quantitative research design was employed, and data were collected from directors, managers, and employees of small and medium-sized enterprises (SMEs) operating in the tourism and waste recycling sectors. A structured questionnaire, developed through Google Forms, was distributed via email and LinkedIn professional networks. In total, 407 valid responses were obtained and analysed using SmartPLS 4.0, following a two-stage procedure comprising measurement model assessment and structural model evaluation.

The findings reveal that both the circular economy and sustainable tourism exert significant positive effects on sustainable entrepreneurship. Moreover, digitalisation strengthens these relationships, confirming its important moderating role. The study contributes to the literature by developing and empirically testing an integrated model of sustainable entrepreneurship in the Saudi Arabian context. Its findings are also aligned with Saudi Vision 2030 and the Sustainable Development Goals, particularly SDG 8, which focuses on decent work and economic growth, and SDG 12, which promotes responsible consumption and production. In addition, the study offers practical and policy implications for fostering sustainable entrepreneurship, digital transformation, and environmentally responsible business practices in emerging economies.

Keywords: Sustainable entrepreneurship, Circular economy, Sustainable tourism, Saudi Vision 2030, Sustainable Development Goals, Digitalisation

1. INTRODUCTION

In the context of global economic development, the international community continues to face persistent political, environmental, economic, and social challenges, including hunger, global warming, natural resource depletion, and environmental degradation. These challenges are reflected in limited access to fresh water, biodiversity loss, increasing drought conditions, malnutrition, poverty, widening wealth disparities, gender inequalities, and the unequal distribution of opportunities and resources (Ploum et al., 2018; M. S. Shahid et al., 2023). In response, entrepreneurship has increasingly been recognised as a potential mechanism for

addressing urgent global challenges related to economic development, social inclusion, and environmental sustainability (Aghelie et al., 2016; Terán-Yépez et al., 2020). Sustainable entrepreneurship has therefore emerged as an important approach for responding to these interconnected challenges. Unlike traditional entrepreneurship, which is primarily focused on economic value creation, sustainable entrepreneurship integrates economic, environmental, and social objectives through the triple-bottom-line perspective (Belz & Binder, 2017; Terán-Yépez et al., 2020). It seeks to balance financial performance with environmental protection and social responsibility, thereby contributing to long-term value creation for both present and future generations (Shepherd & Patzelt, 2011).

Recent research has examined various factors influencing sustainable entrepreneurship, including circular economy practices, sustainable business models, environmental innovation, and digital transformation (Anand et al., 2021; Mendes et al., 2022; Hunady et al., 2025). Among these, the circular economy (CE) and sustainable tourism (ST) have received growing scholarly attention because of their potential to enhance environmental sustainability, entrepreneurial growth, and long-term business resilience. The circular economy promotes resource efficiency, waste reduction, recycling, and the reuse of materials, while sustainable tourism supports responsible economic activity that preserves environmental and cultural resources. In Saudi Arabia, sustainable entrepreneurship has gained relevance following the implementation of Saudi Vision 2030. This strategic framework aims to diversify the national economy, reduce dependence on oil revenues, promote environmental sustainability, strengthen entrepreneurial ecosystems, and accelerate digital transformation. Vision 2030 also places strong emphasis on tourism development, SME growth, innovation, and environmental preservation as key pillars of sustainable economic development. Despite the expanding literature on sustainable entrepreneurship, previous studies have largely examined the circular economy, sustainable tourism, and digitalisation as separate research areas. Limited empirical evidence exists on the combined effects of these variables within a single conceptual framework, particularly in emerging economies such as Saudi Arabia. Moreover, few studies have investigated how these dimensions collectively contribute to sustainable entrepreneurship while also supporting the objectives of Saudi Vision 2030 and the Sustainable Development Goals (SDGs). Accordingly, this study examines the effects of the circular economy and sustainable tourism on sustainable entrepreneurship, while also investigating the moderating role of digitalisation among SMEs operating in the tourism and recycling sectors in Saudi Arabia. The study contributes to the literature by integrating these variables into a unified empirical framework. It also provides practical insights for policymakers, entrepreneurs, and SME managers by highlighting how circular economy practices, sustainable tourism initiatives, and digital transformation can support sustainable entrepreneurship, Saudi Vision 2030, and the SDGs, particularly SDG 8, which focuses on decent work and economic growth, and SDG 12, which promotes responsible consumption and production.

2. LITERATURE REVIEW

2. 1. CIRCULAR ECONOMY AND SUSTAINABLE ENTREPRENEURSHIP

In the context of global economic development, the international community continues to face persistent political, environmental, economic, and social challenges, including hunger, global warming, natural resource depletion, and environmental degradation. These challenges are reflected in limited access to fresh water, biodiversity loss, increasing drought conditions, malnutrition, poverty, widening wealth disparities, gender inequalities, and the unequal distribution of opportunities and resources (Ploum et al., 2018; M. S. Shahid et al., 2023). In

response, entrepreneurship has increasingly been recognised as a potential mechanism for addressing urgent global challenges related to economic development, social inclusion, and environmental sustainability (Aghelie et al., 2016; Terán-Yépez et al., 2020). Sustainable entrepreneurship has therefore emerged as an important approach for responding to these interconnected challenges. Unlike traditional entrepreneurship, which is primarily focused on economic value creation, sustainable entrepreneurship integrates economic, environmental, and social objectives through the triple-bottom-line perspective (Belz & Binder, 2017; Terán-Yépez et al., 2020). It seeks to balance financial performance with environmental protection and social responsibility, thereby contributing to long-term value creation for both present and future generations (Shepherd & Patzelt, 2011). Recent research has examined various factors influencing sustainable entrepreneurship, including circular economy practices, sustainable business models, environmental innovation, and digital transformation (Anand et al., 2021; Mendes et al., 2022). Among these, the circular economy (CE) and sustainable tourism (ST) have received growing scholarly attention because of their potential to enhance environmental sustainability, entrepreneurial growth, and long-term business resilience. The circular economy promotes resource efficiency, waste reduction, recycling, and the reuse of materials, while sustainable tourism supports responsible economic activity that preserves environmental and cultural resources. In Saudi Arabia, sustainable entrepreneurship has gained relevance following the implementation of Saudi Vision 2030. This strategic framework aims to diversify the national economy, reduce dependence on oil revenues, promote environmental sustainability, strengthen entrepreneurial ecosystems, and accelerate digital transformation. Vision 2030 also places strong emphasis on tourism development, SME growth, innovation, and environmental preservation as key pillars of sustainable economic development. Despite the expanding literature on sustainable entrepreneurship, previous studies have largely examined the circular economy, sustainable tourism, and digitalisation as separate research areas. Limited empirical evidence exists on the combined effects of these variables within a single conceptual framework, particularly in emerging economies such as Saudi Arabia. Moreover, few studies have investigated how these dimensions collectively contribute to sustainable entrepreneurship while also supporting the objectives of Saudi Vision 2030 and the Sustainable Development Goals (SDGs). Accordingly, this study examines the effects of the circular economy and sustainable tourism on sustainable entrepreneurship, while also investigating the moderating role of digitalisation among SMEs operating in the tourism and recycling sectors in Saudi Arabia. The study contributes to the literature by integrating these variables into a unified empirical framework. It also provides practical insights for policymakers, entrepreneurs, and SME managers by highlighting how circular economy practices, sustainable tourism initiatives, and digital transformation can support sustainable entrepreneurship, Saudi Vision 2030, and the SDGs, particularly SDG 8, which focuses on decent work and economic growth, and SDG 12, which promotes responsible consumption and production.

2. 2. SUSTAINABLE TOURISM

The tourism industry has experienced continuous expansion and holds considerable economic significance at both global and local levels. In addition to its economic contribution, tourism has important social and cultural dimensions, creating opportunities for sustainable and equitable development (World Tourism Organization, 2020). As sustainable development has become a central principle of contemporary economic policy and business practice, tourism is increasingly linked to the three dimensions of sustainability: economic growth, environmental protection, and social wellbeing.

Sustainable tourism can encourage innovation, support the adoption of efficient organisational

structures, and promote responsible business practices. These developments may strengthen competitiveness and create new opportunities for firms operating within the tourism sector (Agyei-waah et al., 2017). In this regard, sustainable tourism is not only relevant for environmental preservation but also for entrepreneurship, employment generation, and long-term economic resilience. The global importance of tourism is evident in its contribution to economic growth and employment. According to the World Tourism Organization (2020), the travel and tourism sector grew by 3.9% in 2018, exceeding the global economic growth rate of 3.2% for the eighth consecutive year. Over the preceding five years, the sector generated one-fifth of all new employment opportunities worldwide, employing approximately 319 million people and contributing 10.4% of global GDP. These figures demonstrate the strategic role of tourism as a driver of development and job creation.

However, tourism depends heavily on the preservation of natural and cultural resources, while poorly managed tourism activities may produce negative environmental and social consequences. Accordingly, the environmental impacts of tourism growth have received considerable scholarly attention (Butler, 1999; Lu & Nepal, 2009; Pjerotic et al., 2017; Waligo et al., 2013). Sustainable tourism has therefore become essential for balancing economic benefits with environmental responsibility and social inclusion.

Several international organisations and researchers have proposed measures for advancing sustainable tourism, including climate change mitigation, pollution reduction, renewable resource use, waste management, natural resource conservation, and socially responsible tourism practices (UNEP, 2004; UNWTO, 2013, 2014, 2017, 2019). Previous studies also highlight the importance of ethical tourism practices, particularly in relation to waste reduction, resource conservation, community wellbeing, and stakeholder engagement (Andereck et al., 2005, 2007; Andereck & Nyaupane, 2011; Luekveerawattana, 2018; Morgan et al., 2015; Murava & Korobeinykova, 2016).

Based on this discussion, sustainable tourism may contribute to sustainable entrepreneurship by encouraging innovation, responsible resource use, community-oriented business models, and long-term value creation. Therefore, this study investigates the relationship between sustainable tourism and sustainable entrepreneurship.

H_2 : *Sustainable tourism has a positive effect on sustainable entrepreneurship.*

2. 3. DIGITALIZATION

Digital technologies have become central to the operational frameworks of businesses across industries. Intelligent solutions are increasingly used to optimise production, improve organisational efficiency, and support the transition towards more sustainable business models. In this study, digitalisation refers to the development and integration of technologies such as big data, the Internet of Things (IoT), artificial intelligence (AI), and other related digital innovations (Kristoffersen et al., 2020; Seele & Lock, 2017; Alsharaideh et al., 2026).

The integration of digital technologies into business operations can significantly influence sustainability outcomes. Digitalisation enables organisations to implement sustainable business strategies more effectively by supporting social, economic, and environmental objectives in everyday activities. Moreover, the adoption of advanced technologies can strengthen sustainability-oriented practices while enhancing firms' competitive advantage (Spaltini et al., 2021; Seisenbekov et al., 2026).

Smart technologies are expected to form the foundation of future digital enterprises because they facilitate new business models, improve decision-making, and create opportunities for value generation (Leinwand et al., 2021). For example, IoT applications allow firms to increase production capacity, monitor resource use, optimise performance, and improve opera-

tional efficiency (Seele & Lock, 2017). Similarly, AI and big data analytics can support more accurate forecasting, better resource allocation, and more efficient management of environmental and organisational processes.

Despite these advantages, digitalisation also involves risks and challenges. The adoption of digital technologies often requires substantial financial investment, organisational restructuring, and the development of new technical capabilities. In addition, the growing threat of cyberattacks has made cybersecurity and data protection essential requirements for firms seeking to digitalise their operations (Demartini et al., 2019).

Previous research has demonstrated a close relationship between sustainability, policymaking, and the implementation of digital solutions (Hung, 2023; Zoppelletto & Bullini Orlandi, 2022). Studies have also linked digitalisation with circular economy practices and sustainable tourism, suggesting that AI, IoT, and related technologies can facilitate the transition from linear economic models towards more circular and sustainable systems. In this context, digitalisation may strengthen the effects of circular economy practices and sustainable tourism initiatives on sustainable entrepreneurship by improving efficiency, innovation capacity, resource management, and long-term value creation.

Based on this reasoning, the following hypotheses are proposed:

H₃: Digitalisation moderates the relationship between the circular economy and sustainable entrepreneurship.

H₄: Digitalisation moderates the relationship between sustainable tourism and sustainable entrepreneurship.

2. 4. THEORETICAL BACKGROUND

This study is grounded in three complementary theoretical perspectives: the Resource-Based View (RBV), Institutional Theory, and Dynamic Capabilities Theory. These theories provide a basis for explaining the relationships among the circular economy, sustainable tourism, digitalisation, and sustainable entrepreneurship.

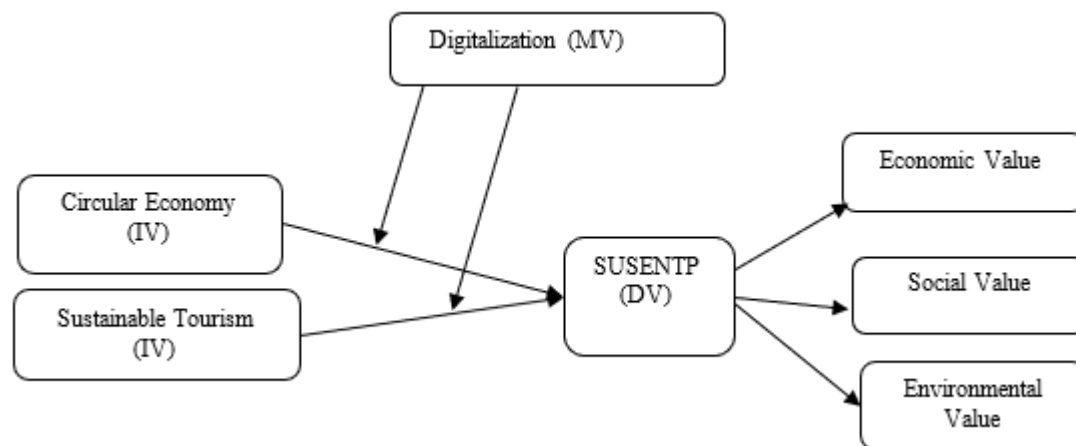
According to the Resource-Based View, organisations achieve competitive advantage by developing and utilising resources and capabilities that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). In the context of this study, circular economy practices and digitalisation capabilities are regarded as strategic organisational resources. These resources enable firms to improve resource efficiency, enhance innovation capacity, strengthen environmental performance, and support long-term sustainability. Accordingly, SMEs that adopt circular practices and digital technologies are expected to achieve stronger sustainable entrepreneurial outcomes.

Institutional Theory explains how external pressures, regulatory frameworks, and national development strategies shape organisational behaviour (DiMaggio & Powell, 1983). In Saudi Arabia, Vision 2030 serves as an important institutional mechanism that encourages SMEs to adopt sustainability-oriented practices, environmental initiatives, tourism development strategies, and digital transformation programmes. Therefore, institutional support may facilitate the adoption of sustainable entrepreneurship practices by creating a favourable policy and business environment.

Dynamic Capabilities Theory further explains how organisations integrate, reconfigure, and adapt internal and external resources in response to changing environmental conditions (Teece et al., 1997). From this perspective, digitalisation enhances firms' adaptive capabilities by supporting innovation, operational flexibility, responsiveness, and sustainability transitions. Digital technologies may therefore strengthen the relationships between circular economy practices, sustainable tourism initiatives, and sustainable entrepreneurship.

By integrating these theoretical perspectives, this study develops a comprehensive framework explaining how the circular economy and sustainable tourism influence sustainable entrepreneurship, while digitalisation strengthens these relationships. This framework is examined within the context of Saudi SMEs and the strategic objectives of Vision 2030.

Figure 1. Theoretical framework based on RBV, Institutional Theory, and Dynamic Capabilities Theory



Source: Developed by the authors based on RBV (Barney, 1991), Institutional Theory (DiMaggio & Powell, 1983), and Dynamic Capabilities Theory (Teece et al., 1997).

3. RESEARCH METHODS

This study adopted a cross-sectional research design. Data were collected through an online structured questionnaire developed using Google Forms and distributed via email and LinkedIn professional networks. The questionnaire consisted of five sections: demographic information, sustainable entrepreneurship (SUSENTP), circular economy (CE), sustainable tourism (ST), and digitalisation. All measurement items were assessed using a five-point Likert scale ranging from “strongly disagree” to “strongly agree”.

The study participants included directors, managers, and team members employed in small and medium-sized enterprises (SMEs) operating in the tourism and waste recycling sectors across the Kingdom of Saudi Arabia. Data were collected during the period from 2022 to 2023. A random sampling technique was applied to select respondents. In total, 407 valid responses were obtained and used for data analysis. This sample size exceeds the minimum requirement for Partial Least Squares Structural Equation Modelling (PLS-SEM), thereby ensuring adequate statistical power and model stability.

Data analysis was conducted using SPSS Statistics and SmartPLS 4.0. A two-step analytical approach was employed, comprising measurement model assessment and structural model evaluation. Bootstrapping with 5,000 subsamples was performed to examine the significance of path coefficients, t-values, and confidence intervals.

3. 1. STUDY MEASURES

The measurement scales employed in this study were adapted from previously validated instruments in the literature. The circular economy scale was adapted from Zeng et al. (2017), while the sustainable tourism scale was adopted from the World Tourism Organisation (WTO, 1996). The sustainable entrepreneurship scale was adapted from Stevens et al. (2015), and the digitalisation scale was adapted from Bürklin and Wynants (2020), Cainelli et al. (2020), and Chen (2020).

Minor modifications were made to the measurement items to ensure their suitability for the

context of small and medium-sized enterprises (SMEs) in Saudi Arabia. During the measurement model assessment, several items were removed due to low factor loadings to improve construct reliability and validity. All constructs were measured using a five-point Likert scale ranging from 1, “strongly disagree”, to 5, “strongly agree”. The final measurement items are presented in Appendix A.

4. FINDINGS

Table 1 presents the demographic profile of the respondents included in this study. The sample comprised both male and female participants, with males accounting for 70.17% and females representing 29.83% of the total sample. Respondents were drawn from small and medium-sized enterprises (SMEs) operating in the tourism sector (66.35%) and the circular economy sector (33.65%).

About job position, most respondents were managers (59.61%), followed by directors (22.59%) and other team members (17.78%). In terms of educational background, 40.56% of respondents held undergraduate degrees, while 59.44% had graduate degrees.

The age distribution shows that 18% of respondents were under 30 years of age, 52% were between 30 and 45 years old, and 30% were over 45 years old. Overall, the demographic profile indicates that the sample consisted primarily of experienced professionals working in SMEs associated with the tourism and circular economy sectors in Saudi Arabia.

Table 1. Descriptive Statistics of Respondents

Description	Type	Frequency %
Gender	Male	70.17%
	Female	29.83%
SMEs	Tourism	66.35 %
	Circular Economy	33.65 %
Respondent	Director	22.59%
	Manager	59.61%
	Team Members	17.78%
Age	Under 30 years	18%
	30- 45 years	30%
	Over 45 years	44.64%
Education	Undergraduate	40.56 %
	Graduate	59.44%

Source: Primary data

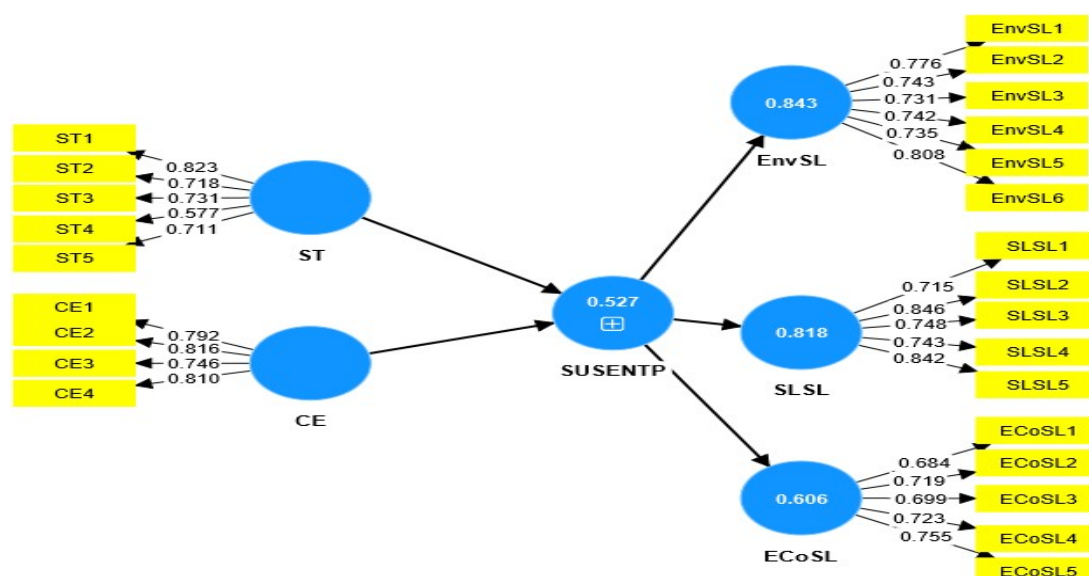
The demographic results indicate that the respondents have relevant professional experience and educational background, which increases the reliability and validity of the collected data.

4. 1. PLS SEM

4. 1. 1. MEASUREMENT MODEL ASSESSMENT

The study employed a two-stage approach to assess the Partial Least Squares Structural Equation Modelling (PLS-SEM) results (Henseler, 2017). Using SmartPLS 4.0, the measurement model was evaluated in terms of factor loadings, composite reliability, Cronbach’s alpha, average variance extracted (AVE), and discriminant validity (Becker et al., 2023). The results of the measurement model assessment are presented in Figure 2 and Table 2.

Figure 2. Measurement model Assessment



Source: Primary data analysed using SmartPLS 4.0.

The factor loadings for most items exceeded the recommended threshold of 0.60, except for ST4. Previous studies suggest that factor loadings between 0.50 and 0.70 are acceptable, while values above 0.50 provide sufficient evidence of convergent validity (Hair et al., 2013). Therefore, the results confirm that the measurement model achieved an acceptable level of convergent validity. Table 2 reports the factor loadings, Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), and variance inflation factor (VIF) values. Cronbach's alpha values exceeded the recommended threshold of 0.70, indicating satisfactory internal consistency (George & Mallery, 2003). Similarly, the CR values were above 0.70 and the AVE values met or exceeded the recommended threshold of 0.50, confirming construct reliability and convergent validity (Fornell & Larcker, 1981; Hair et al., 2014). The results also indicate that the higher-order construct of sustainable entrepreneurship achieved acceptable levels of internal consistency, CR, and AVE, as shown in Table 3. In addition, the VIF values were within acceptable limits, suggesting that multicollinearity was not a concern. Overall, these findings confirm the reliability, validity, and suitability of the SUSENTP construct for further structural model analysis.

Table. 2 LOC Loadings, Internal consistency, Composite Reliability, and AVE

Construct	Item	Loading	Cronbach Alpha	CR	AVE	VIF
CE	C1	0.792				
CE	C2	0.816	0.801	0.870	0.627	1.994
CE	C3	0.746				
CE	C4	0.810				
ST	ST1	0.823				
ST	ST2	0.718				
ST	ST3	0.731	0.761	0.839	0.513	1.375
ST	ST4	0.577				
ST	ST5	0.711				
DG	DG1	0.722	0.837	0.886	0.853	1.388

Source: Primary data

Table 3. Higher Order Construct (HOC) Internal Consistency, CR&AVE

Construct	Cronbach's Alpha	Composite Reliability	AVE
SUSENP	0.923	0.946	0.815

Source: Primary data

Discriminant validity was subsequently assessed to determine whether the constructs were empirically distinct from one another. Following the Fornell-Larcker criterion, the shared variance between constructs should not exceed the average variance extracted (AVE) for each construct (Fornell & Larcker, 1981). As shown in Table 4, this requirement was satisfied, indicating adequate discriminant validity among the constructs. The results for the higher-order constructs (HOCs) also met the recommended criterion, as their shared variances remained below the corresponding AVE values. These findings confirm that the constructs used in the study are sufficiently distinct and suitable for further structural model analysis.

Table 4. Low order construct (LOC) Fornell-Larcker criterion

Construct	CE	ECoSL	EnvSL	SLSL	ST
CE	0.792				
ECoSL	0.694	0.716			
EnvSL	0.550	0.563	0.756		
SLSL	0.559	0.558	0.775	0.781	
ST	0.570	0.562	0.549	0.468	0.717

Source: Primary data

Discriminant validity was evaluated using the Fornell-Larcker criterion. As shown in Table 4, the square root of the average variance extracted (AVE) for each construct exceeded the inter-construct correlations in most cases, indicating acceptable discriminant validity. These results suggest that the constructs included in the model are empirically distinct and suitable for further structural analysis.

Table 5. HOC Fornell-Larcker criterion

Constructs	LV scores - CE	LV scores - ST	LV scores – SUSENP
LV scores – CE	1		
LV scores – ST	0.57	1	
LV scores – SUSENP	0.694	0.608	0.903

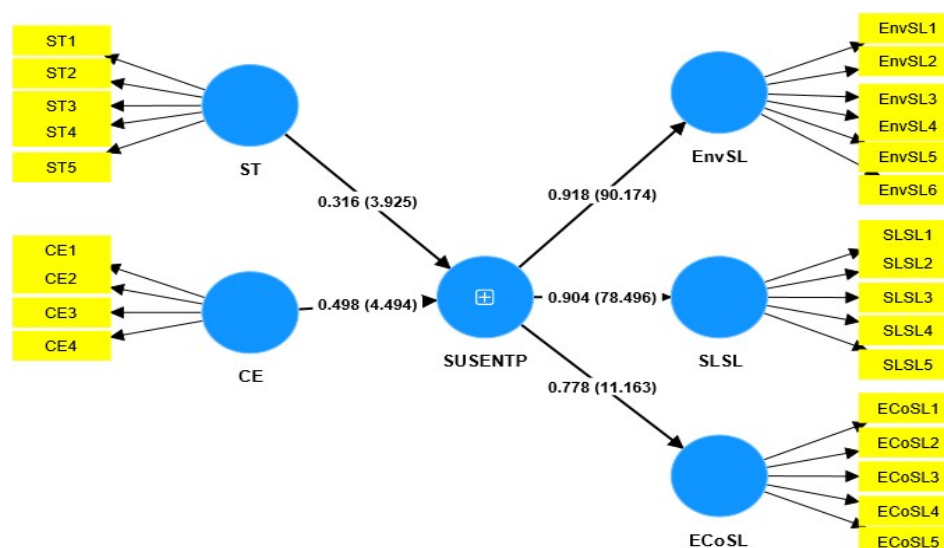
Source: Primary data

4. 1. 2. STRUCTURAL MODEL ASSESMENT

The structural model was evaluated using bootstrapping in SmartPLS 4.0 with 5,000 subsamples and 407 cases to assess the significance of the path coefficients (Hair et al., 2017). As presented in Table 6 and Figure 3, the results confirm significant relationships among the circular economy, sustainable tourism, digitalisation, and sustainable entrepreneurship. The circular economy has a significant positive effect on sustainable entrepreneurship ($\beta = 0.498$, $t = 4.494$, $p < 0.001$), supporting H1. Similarly, sustainable tourism positively influences sustainable entrepreneurship ($\beta = 0.316$, $t = 3.925$, $p < 0.001$), supporting H2. The moderating effect of digitalisation on the relationship between the circular economy and sustainable entrepreneurship is also significant ($\beta = 0.098$, $t = 2.015$, $p = 0.044$), supporting H3. In addition, digitalisation significantly moderates the relationship between sustainable tourism and sustainable entrepre-

neurship ($\beta = 0.188$, $t = 2.863$, $p = 0.013$), supporting H4. Therefore, all proposed hypotheses are supported. Common method bias was examined using Harman's single-factor test. The results showed that a single factor explained less than 50% of the total variance, indicating that common method bias was not a major concern. Full collinearity VIF values were also assessed, and all values were below the recommended threshold of 3.3, further confirming that common method bias did not threaten the validity of the findings.

Figure 3. Structural Model Path coefficient and T statistics



Source: Primary data analysed using SmartPLS 4.0.

4. 1. 3. HYPOTHESIS TESTING

The structural model results were evaluated using bootstrapping procedures with 5000 subsamples and 407 cases. The path coefficients, t-values, and p-values were examined to test the study hypotheses. The results of the structural model are presented in Table 6.

Table 6. Structural Assessment of the model

Hypothesis	Relationship	Beta	Mean	Std. Dev.	T-value	P-value	Decision
H1	CE → SUSENTP	0.498	0.482	0.111	4.494	0.000	Supported
H2	ST → SUSENTP	0.316	0.327	0.081	3.925	0.000	Supported
H3	Digitalisation × ST → SUSENTP	0.188	0.126	0.047	2.863	0.013	Supported
H4	Digitalisation × CE → SUSENTP	0.098	0.097	0.049	2.015	0.044	Supported

Source: Primary data

The coefficient of determination (R^2) for sustainable entrepreneurship was 0.527, indicating that the model explains 52.7% of its variance. This suggests a moderate level of explanatory power. The effect size (f^2) results further show the relative contribution of each predictor, with the circular economy demonstrating a large effect and sustainable tourism showing a medium effect. These findings indicate that the circular economy has a stronger influence on sustainable entrepreneurship than sustainable tourism.

Model fit was assessed using the Standardised Root Mean Square Residual (SRMR). The SRMR values were 0.112 for the saturated model and 0.116 for the estimated model, indicating an acceptable level of model fit. Overall, the results confirm that the model demonstrates satisfactory explanatory power, effect size, and fit.

5. DISCUSSION

This study examined the relationships among the circular economy (CE), sustainable tourism (ST), digitalisation, and sustainable entrepreneurship within Saudi Arabian SMEs operating in the tourism and recycling sectors. The findings support all proposed hypotheses and provide important theoretical and practical insights into the development of sustainable entrepreneurship in an emerging economy context. The results are consistent with the theoretical foundations of the study. From the perspective of the Resource-Based View (RBV), circular economy practices and digitalisation capabilities represent strategic organisational resources that enhance innovation, resource efficiency, environmental performance, and long-term competitiveness. SMEs that adopt circular practices and digital technologies are therefore better positioned to generate sustainable value and strengthen entrepreneurial sustainability. The findings also align with Institutional Theory, as Saudi Vision 2030 and related national sustainability initiatives provide an institutional framework that encourages SMEs to adopt environmental responsibility, digital transformation, and sustainable tourism practices. This suggests that national development strategies and policy support play a significant role in promoting sustainable entrepreneurship in Saudi Arabia. In addition, the results support Dynamic Capabilities Theory by highlighting the role of digitalisation in strengthening organisational adaptability. Digital technologies enable firms to reconfigure resources, improve innovation capacity, and respond more effectively to environmental and market changes, thereby supporting sustainability transitions. Regarding the direct effects, the circular economy was found to have a positive and significant influence on sustainable entrepreneurship ($\beta = 0.498$, $t = 4.494$, $p < 0.001$), supporting H1. This indicates that SMEs implementing circular practices, such as recycling, waste reduction, resource optimisation, and sustainable production, are more likely to improve sustainable entrepreneurial outcomes. This finding is consistent with previous studies showing that circular economy practices contribute to sustainability-oriented business models and entrepreneurial growth (Barros et al., 2021; Van Langen et al., 2021; Yusuf & Lytras, 2023). Moreover, the circular economy demonstrated the strongest effect among the predictors, suggesting that resource efficiency and environmental practices are particularly important for sustainable entrepreneurship in the Saudi context. Sustainable tourism also had a positive and significant effect on sustainable entrepreneurship ($\beta = 0.316$, $t = 3.925$, $p < 0.001$), supporting H2. This result suggests that tourism enterprises adopting practices related to environmental preservation, cultural heritage conservation, community development, biodiversity protection, and responsible tourism management are more likely to achieve sustainable entrepreneurial outcomes. The finding is consistent with prior research emphasising the role of sustainable tourism in supporting local development, long-term sustainability, and competitive advantage (Kapera, 2018; León-Gómez et al., 2021). It also reflects the priorities of Saudi Vision 2030, particularly tourism diversification, heritage preservation, and sustainable economic development. The moderating effects of digitalisation were also confirmed. Digitalisation positively moderated the relationship between the circular economy and sustainable entrepreneurship ($\beta = 0.098$, $t = 2.015$, $p = 0.044$), supporting H3. This indicates that digital technologies strengthen circular economy practices by enabling better monitoring, resource optimisation, waste management, and data-driven decision-making. Similarly, digitalisation positively moderated the relationship between sustainable tourism and sustainable entrepreneurship ($\beta = 0.188$, $t = 2.863$, $p = 0.013$), supporting H4. This suggests that digital tools enhance sustainability transitions in tourism enterprises by improving operational efficiency, customer engagement, innovation capacity, and resource management. Overall, the study contributes to the literature by integrating circular economy, sustainable tourism, and digitalisation into a unified framework for explaining sustainable entrepreneurship. Practically,

the findings provide useful implications for policymakers, SME managers, and entrepreneurs seeking to advance sustainability-oriented business practices in Saudi Arabia. The results also support the objectives of Saudi Vision 2030 and contribute to the Sustainable Development Goals, particularly SDG 8, which focuses on decent work and economic growth, and SDG 12, which promotes responsible consumption and production.

6. PRACTICAL IMPLICATIONS OF THE STUDY

Policymakers should prioritise the design and implementation of policies that encourage circular economy practices, sustainable tourism initiatives, and digital transformation. By establishing a supportive regulatory and institutional environment, policymakers can facilitate the growth of sustainable businesses and strengthen sustainable entrepreneurship. The findings of this study also provide useful insights for entrepreneurs seeking to engage in policy advocacy. Entrepreneurs can collaborate with policymakers to highlight the economic, environmental, and social benefits of circular economy practices, sustainable tourism, and digitalisation. Such engagement may contribute to the development of regulatory frameworks that support sustainable business growth and long-term entrepreneurial resilience. Stakeholder engagement is also essential for sustainable entrepreneurship. Entrepreneurs should actively involve customers, suppliers, employees, local communities, and other relevant stakeholders in sustainability-oriented initiatives. Effective communication of sustainability efforts can strengthen trust, improve credibility, and enhance cooperation within stakeholder networks. In addition, educational institutions and entrepreneurship support organisations should integrate sustainability principles into their curricula, training programmes, and capacity-building activities. Providing entrepreneurs with knowledge of circular economy principles, sustainable tourism practices, and digital technologies can enhance their ability to develop and manage sustainable enterprises. Finally, collaboration among government institutions, businesses, civil society organisations, and local communities is crucial for advancing sustainable entrepreneurship. Strategic partnerships can support knowledge sharing, resource mobilisation, and collective action in addressing sustainability challenges.

7. CONCLUSIONS

Sustainable entrepreneurship has emerged as an important response to contemporary environmental, economic, and social challenges. The findings of this study confirm that the circular economy and sustainable tourism have significant positive effects on the development of sustainable enterprises. These results highlight the importance of sustainability-oriented entrepreneurship in supporting the Sustainable Development Goals, particularly through resource efficiency, waste reduction, environmental protection, energy efficiency, inclusive growth and community wellbeing. The results further demonstrate that the circular economy and sustainable tourism jointly contribute to sustainable entrepreneurial behaviour. Circular economy practices encourage more efficient use of resources, waste minimisation, recycling, and the development of innovative business models. By adopting these practices, entrepreneurs can create enterprises that generate economic value while reducing environmental harm. Similarly, sustainable tourism creates favourable conditions for entrepreneurship by promoting environmental preservation, cultural heritage protection, community participation, and responsible tourism management. Enterprises based on sustainable tourism principles can attract environmentally conscious consumers while contributing to local development and social inclusion. Overall, the study suggests that sustainable entrepreneurship can serve as a practical mechanism for advancing economic growth, environmental sustainability, and social wellbeing. By promoting inclusivity, equality, and community engagement, entrepreneurs can contribute to

reducing inequalities, empowering marginalised groups, and strengthening long-term sustainable development.

8. LIMITATIONS AND FUTURE DIRECTIONS

This study has several limitations that should be acknowledged. First, although the sample provides useful empirical insights, it is limited to SMEs operating in the tourism and recycling sectors in Saudi Arabia. Therefore, the findings may not be directly generalisable to other sectors, countries, or institutional contexts. Second, the study did not include control variables, which may limit the ability to account for alternative explanations influencing sustainable entrepreneurship.

Third, the cross-sectional research design restricts the possibility of establishing causal relationships among the examined variables. Future studies could employ longitudinal or experimental designs to provide stronger evidence of causality and to examine how the relationships among circular economy practices, sustainable tourism, digitalisation, and sustainable entrepreneurship evolve over time.

Moreover, cultural, economic, regulatory and institutional differences may influence the relationships examined in this study. Future research should therefore test the proposed framework in different national and sectoral contexts. In addition, future studies may incorporate other relevant factors affecting sustainable entrepreneurship, such as government regulation, policy stability, renewable energy adoption, green innovation, social empowerment, and stakeholder engagement.

Finally, further research should assess the effectiveness of existing laws, policies, and institutional support mechanisms in promoting sustainable entrepreneurship. Such investigations would provide deeper insights into how regulatory frameworks can support circular economy practices, sustainable tourism, digital transformation, and long-term sustainable business development.

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Informed Consent Statement

Informed consent was obtained from all participants involved in the study.

Conflicts of Interest

“The author declare no conflict of interest.”

Appendix A

Code	Measuring Items
Circular Economy	
C1	Non-recyclable raw materials with renewable, recyclable
C2	Environmentally friendly packaging
C3	Waste product recycled
C4	Left over material reused in process
Sustainable Tourism	
ST1	Tourism contribution to local economy
ST2	Local satisfaction
ST3	Consumer satisfaction
ST4	Critical ecosystems
ST5	Planning process
Economic Sustainability	
EcoSL1	Profit
EcoSL2	Return on investment
EcoSL3	Financial resilience
EcoSL4	Long-term viability
EcoSL5	Business stability
Environment Sustainability	
EnvSL 1	Renewable resource
EnvSL 2	Low emissions
EnvSL 3	Low waste
EnvSL 4	Biodiversity
EnvSL 5	Pollution prevention (Air&Water)
EnvSL 6	Pollution prevention (Land)
Social Sustainability	
SLSL1	Equality and diversity
SLSL2	Wellbeing&Community development
SLSL3	Secure livelihood
SLSL4	Labor standards
SLSL5	Health and Safety
Digitalization	
DG 1	Digital platforms to monitor and track products in the value chain
DG 2	Use digital platforms to attract new customers and understand their evolving needs
DG 3	Use digital platforms for making decisions to support reuse and recycling
DG 4	Use digital platforms to optimize resource utilization, e.g. using waste as a re-source, optimal energy consumption
DG 5	Use digital platforms to enhance renovation of products and operational practices

REFERENCES

- Aghelie, A., Sorooshian, S., & Azizan, N. A. (2016). Research Gap in Sustainopreneurship. *Indian Journal of Science and Technology*, 9(12). <https://doi.org/10.17485/ijst/2016/v9i12/77648>
- Agyeiwaah, E., McKercher, B., & Sontikul, W. (2017). Identifying core indicators of sustainable tourism: A path forward? *Tourism Management Perspectives*, 24, 26–33. <https://doi.org/10.1016/j.tmp.2017.07.005>
- Alexandru Ioan Cuza University of Iati, Romania, Cautitanu, C., Asandului, L., Alexandru Ioan Cuza University of Iati, Romania, Borza, M., Alexandru Ioan Cuza University of Iati, Romania, Turturean, C., & Alexandru Ioan Cuza University of Iati, Romania. (2018). Quantitative Approach to Circular Economy in the OECD Countries. *Www.Amfiteatru economic.Ro*, 20(48), 262. <https://doi.org/10.24818/EA/2018/48/262>
- Alsarhan, L. M., Alayyar, A. S., Alqahtani, N. B., & Khday, N. H. (2021). Circular Carbon Economy (CCE): A Way to Invest CO2 and Protect the Environment, a Review. *Sustainability*, 13(21), 11625. <https://doi.org/10.3390/su132111625>
- Alsharaideh, A. M. A., Alzubi, M. M. S., Alqudah, A. M. A., Alqudah, O. M. A., & Darabah, K. (2026). AI-Enabled Frugal Innovation: Extending the Dynamic Capabilities Framework for Sustainable Development. *ECONOMICS - Innovative and Economic Research Journal*, 14(2), 435 - 455. <https://doi.org/10.2478/eoik-2026-0044>
- Anand, A., Argade, P., Barkemeyer, R., & Salignac, F. (2021). Trends and patterns in sustainable entrepreneurship research: A bibliometric review and research agenda. *Journal of Business Venturing*, 36(3), 106092. <https://doi.org/10.1016/j.jbusvent.2021.106092>
- Andereck, K. L., & Nyaupane, G. P. (2011). Exploring the Nature of Tourism and Quality of Life Perceptions among Residents. *Journal of Travel Research*, 50(3), 248–260. <https://doi.org/10.1177/0047287510362918>
- Andereck, K. L., Valentine, K. M., Knopf, R. C., & Vogt, C. A. (2005). Residents' perceptions of community tourism impacts. *Annals of Tourism Research*, 32(4), 1056–1076. <https://doi.org/10.1016/j.annals.2005.03.001>
- Andereck, K. L., Valentine, K. M., Vogt, C. A., & Knopf, R. C. (2007). A Cross-cultural Analysis of Tourism and Quality of Life Perceptions. *Journal of Sustainable Tourism*, 15(5), 483–502. <https://doi.org/10.2167/jost612.0>
- Barrachina Fernández, M., García-Centeno, M. D. C., & Calderón Patier, C. (2021). Women Sustainable Entrepreneurship: Review and Research Agenda. *Sustainability*, 13(21), 12047. <https://doi.org/10.3390/su132112047>
- Barros, M. V., Salvador, R., Do Prado, G. F., De Francisco, A. C., & Piekarski, C. M. (2021). Circular economy as a driver to sustainable businesses. *Cleaner Environmental Systems*, 2, 100006. <https://doi.org/10.1016/j.cesys.2020.100006>
- Becker, J.-M., Cheah, J.-H., Gholamzade, R., Ringle, C. M., & Sarstedt, M. (2023). PLS-SEM's most wanted guidance. *International Journal of Contemporary Hospitality Management*, 35(1), 321–346. <https://doi.org/10.1108/IJCHM-04-2022-0474>
- Belz, F. M., & Binder, J. K. (2017). Sustainable Entrepreneurship: A Convergent Process Model: Sustainable Entrepreneurship: A Convergent Process Model. *Business Strategy and the Environment*, 26(1), 1–17. <https://doi.org/10.1002/bse.1887>
- Bocken, N. M. P., Short, S. W., Rana, P., & Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*, 65, 42–56. <https://doi.org/10.1016/j.jclepro.2013.11.039>
- Bürklin, N., & Wynants, J. (2020). Opening new opportunities to close the loop: How technology influences the circular economy. In *Technology-Driven Sustainability* (pp. 219–240). https://link.springer.com/chapter/10.1007/978-3-030-19254-9_11

- Butler, R. W. (1999). Sustainable tourism: A state-of-the-art review. *Tourism Geographies*, 1(1), 7–25. <https://doi.org/10.1080/14616689908721291>
- Cainelli, G., D’Amato, A., & Mazzanti, M. (2020). Resource efficient eco-innovations for a circular economy: Evidence from EU firms. *Research Policy*, 49(1), 103827. <https://doi.org/10.1016/j.respol.2019.103827>
- Chen, C.-W. (2020). Improving Circular Economy Business Models: Opportunities for Business and Innovation : A new framework for businesses to create a truly circular economy. *Johnson Matthey Technology Review*, 64(1), 48–58. <https://doi.org/10.1595/205651320X15710564137538>
- Choi, D. Y., & Gray, E. R. (2008). The venture development processes of “sustainable” entrepreneurs. *Management Research News*, 31(8), 558–569. <https://doi.org/10.1108/01409170810892127>
- Cohen, B., & Winn, M. I. (2007). Market imperfections, opportunity and sustainable entrepreneurship. *Journal of Business Venturing*, 22(1), 29–49. <https://doi.org/10.1016/j.jbusvent.2004.12.001>
- David Cowan. (2018). *The Coming Economic Implosion of Saudi Arabia: A Behavioral Perspective*. Springer International Publishing. <https://link.springer.com/book/10.1007/978-3-319-78529-1>
- Demartini, M., Evans, S., & Tonelli, F. (2019). Digitalization Technologies for Industrial Sustainability. *Procedia Manufacturing*, 33, 264–271. <https://doi.org/10.1016/j.promfg.2019.04.032>
- Dixon, S. E. A., & Clifford, A. (2007). Ecopreneurship – a new approach to managing the triple bottom line. *Journal of Organizational Change Management*, 20(3), 326–345. <https://doi.org/10.1108/09534810710740164>
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1). <https://doi.org/10.2307/3151312>
- Fujiwara, N., Rizos, V., & Nunez, J. (2021). Study on Circular Economy Developments in the GCC Region and Opportunities for Collaboration with the European Union. *EU-GCC Dialogue on Economic Diversification Project*. https://www.eeas.europa.eu/sites/default/files/circular_economy_in_the_gcc_countries_28_04_21.pdf
- Gast, J., Gundolf, K., & Cesinger, B. (2017). Doing business in a green way: A systematic review of the ecological sustainability entrepreneurship literature and future research directions. *Journal of Cleaner Production*, 147, 44–56. <https://doi.org/10.1016/j.jclepro.2017.01.065>
- Geissdoerfer, M., Savaget, P., Bocken, N. M. P., & Hultink, E. J. (2017). The Circular Economy – A new sustainability paradigm? *Journal of Cleaner Production*, 143, 757–768. <https://doi.org/10.1016/j.jclepro.2016.12.048>
- George, D., & Mallery, M. (2003). *Using SPSS for Windows Step by Step: A Simple Guide and Reference*. https://www.researchgate.net/publication/234827666_SPSS_for_Windows_Step-by-Step_A_Simple_Guide_and_Reference_140_update_7th_Edition
- George, G., Howard-Grenville, J., Joshi, A., & Tihanyi, L. (2016). Understanding and Tackling Societal Grand Challenges through Management Research. *Academy of Management Journal*, 59(6), 1880–1895. <https://doi.org/10.5465/amj.2016.4007>
- Hair, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*, 26(2). <https://doi.org/10.1108/EBR-10-2013-0128>
- Henseler, J. (2017). *New Developments in Partial Least Squares (PLS) Path Modeling*. *Industrial Management & Data Systems*, 116(9). <https://doi.org/10.1108/IMDS-09-2016-0366>
- Hoogendoorn, B., Van Der Zwan, P., & Thurik, R. (2019). Sustainable Entrepreneurship: The Role of Perceived Barriers and Risk. *Journal of Business Ethics*, 157(4), 1133–1154. <https://doi.org/10.1007/s10551-017-3646-8>
- Hunady, J., Demeova, E., Chylakova, V. (2025). The Role of Digital Skills and Digitalisation in Enhancing Labour Productivity in the EU. *Collection of papers new economy*, 3(1), 33–45. <https://doi.org/10.61432/CPNE0301033h>

- Hung, N. T. (2023). Green investment, financial development, digitalization and economic sustainability in Vietnam: Evidence from a quantile-on-quantile regression and wavelet coherence. *Technological Forecasting and Social Change*, 186, 122185. <https://doi.org/10.1016/j.techfore.2022.122185>
- Huynh Evertsen, P., Rasmussen, E., & Nenadic, O. (2022). Commercializing circular economy innovations: A taxonomy of academic spin-offs. *Technological Forecasting and Social Change*, 185, 122102. <https://doi.org/10.1016/j.techfore.2022.122102>
- Kapera, I. (2018). Sustainable tourism development efforts by local governments in Poland. *Sustainable Cities and Society*, 40, 581–588. <https://doi.org/10.1016/j.scs.2018.05.001>
- Kevin Van Langen, S., Vassillo, C., Ghisellini, P., Restaino, D., Passaro, R., & Ulgiati, S. (2021). Promoting circular economy transition: A study about perceptions and awareness by different stakeholders groups. *Journal of Cleaner Production*, 316, 128166. <https://doi.org/10.1016/j.jclepro.2021.128166>
- Kirzner, Israel M. (2015). *Competition and entrepreneurship*. <https://press.uchicago.edu/ucp/books/book/chicago/C/bo27304815.html>
- Kristoffersen, E., Blomsma, F., Mikalef, P., & Li, J. (2020). The smart circular economy: A digital-enabled circular strategies framework for manufacturing companies. *Journal of Business Research*, 120, 241–261. <https://doi.org/10.1016/j.jbusres.2020.07.044>
- KSA vision 2030. (2020). <https://www.vision2030.gov.sa>
- Leinwand, P., & Mani, M. M. (2021). *Digitizing Isn't the Same as Digital Transformation*. *Harvard Business Review*. <https://hbr.org/2021/03/digitizing-isnt-the-same-as-digital-transformation>
- León-Gómez, A., Ruiz-Palomo, D., Fernández-Gámez, M. A., & García-Revilla, M. R. (2021). Sustainable Tourism Development and Economic Growth: Bibliometric Review and Analysis. *Sustainability*, 13(4), 2270. <https://doi.org/10.3390/su13042270>
- Linnanen, L. (2002). An Insider's Experiences with Environmental Entrepreneurship. *Greener Management International*, 2002(38), 71–80. <https://doi.org/10.9774/GLEAF.3062.2002.su.00008>
- Lu, J., & Nepal, S. K. (2009). Sustainable tourism research: An analysis of papers published in the *Journal of Sustainable Tourism*. *Journal of Sustainable Tourism*, 17(1), 5–16. <https://doi.org/10.1080/09669580802582480>
- Luekveerawattana, R. (2018). Key Factors Affecting of Tourists' Decisions to Stay at Environmental Friendly Hotels. *Polish Journal of Management Studies*, 17(2), 148–157. <https://doi.org/10.17512/pjms.2018.17.2.13>
- Luomi, M., Yilmaz, F., & Alshehri, T. (2021). *The Circular Carbon Economy Index 2021 – Methodology*. King Abdullah Petroleum Studies and Research Center. <https://doi.org/10.30573/KS--2021-MP02>
- Mendes, A. C. S., Ferreira, F. A. F., Kannan, D., Ferreira, N. C. M. Q. F., & Correia, R. J. C. (2022). A BWB approach to determinants of sustainable entrepreneurship in small and medium-sized enterprises. *Journal of Cleaner Production*, 371, 133300. <https://doi.org/10.1016/j.jclepro.2022.133300>
- Morgan, N., Pritchard, A., & Sedgley, D. (2015). Social tourism and well-being in later life. *Annals of Tourism Research*, 52, 1–15. <https://doi.org/10.1016/j.annals.2015.02.015>
- Moshashai, D., Leber, A. M., & Savage, J. D. (2020). Saudi Arabia plans for its economic future: Vision 2030, the National Transformation Plan and Saudi fiscal reform. *British Journal of Middle Eastern Studies*, 47(3), 381–401. <https://doi.org/10.1080/13530194.2018.1500269>
- Muñoz, P., Janssen, F., Nicolopoulou, K., & Hockerts, K. (2018). Advancing sustainable entrepreneurship through substantive research. *International Journal of Entrepreneurial Behavior & Research*, 24(2), 322–332. <https://doi.org/10.1108/IJEBR-03-2018-427>
- Murava, I., & Korobeinykova, Y. (2016). The Analysis of The Waste Problem in Tourist Destinations on the Example of Carpathian Region in Ukraine. *Journal of Ecological Engineering*, 17(2), 43–51. <https://doi.org/10.12911/22998993/62285>
- Nicolopoulou, K. (2014). Social Entrepreneurship between *Cross-Currents*: Toward a Framework for Theoretical Restructuring of the Field. *Journal of Small Business Management*, 52(4), 678–702. <https://doi.org/10.1111/jsbm.12130>

- Pjerotic, D., Delibasic, M., Jokšiene, I., & Griesiene, I. (2017). Sustainable Tourism Development in the Rural Areas. *Transformations in Business & Economics*, 16(3), 21–30. <https://www.transformations.knf.vu.lt/>
- Paul Ekins, T. Domenech, & P. Drummond. (2019). *The Circular Economy: What, Why, How and Where*. https://link.springer.com/chapter/10.1007/978-3-030-14237-7_2
- Peter Lacy, J. Long, & W. Spindler. (2020). *The Circular Economy Handbook: Realizing the Circular Advantage*. <https://link.springer.com/book/10.1057/978-1-349-58109-2>
- Ploum, L., Blok, V., Lans, T., & Omta, O. (2018). Toward a Validated Competence Framework for Sustainable Entrepreneurship. *Organization&Environment*, 31(2), 113–132. <https://doi.org/10.1177/1086026617697039>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Sarango-Lalangui, P., Santos, J., & Hormiga, E. (2018). The Development of Sustainable Entrepreneurship Research Field. *Sustainability*, 10(6), 2005. <https://doi.org/10.3390/su10062005>
- Schaltegger, S., & Wagner, M. (2011). Sustainable entrepreneurship and sustainability innovation: Categories and interactions. *Business Strategy and the Environment*, 20(4), 222–237. <https://doi.org/10.1002/bse.682>
- Schöggel, J.-P., Stumpf, L., & Baumgartner, R. J. (2020). The narrative of sustainability and circular economy—A longitudinal review of two decades of research. *Resources, Conservation and Recycling*, 163, 105073. <https://doi.org/10.1016/j.resconrec.2020.105073>
- Seele, P., & Lock, I. (2017). The game-changing potential of digitalization for sustainability: Possibilities, perils, and pathways. *Sustainability Science*, 12(2), 183–185. <https://doi.org/10.1007/s11625-017-0426-4>
- Seisenbekov, A., Beisenova, M., Koshetayev, D., Akhmetova, Z., & Suyunbayev, S. (2026). The Impact of Digitalization and Innovation on Postal and Courier Services in the Context of Sustainable Economic Development: Evidence from Kazakhstan. *ECONOMICS - Innovative and Economic Research Journal*, 14(2), 249 - 268. <https://doi.org/10.2478/eoik-2026-0035>
- Shahid, M. S., Hossain, M., Shahid, S., & Anwar, T. (2023). Frugal innovation as a source of sustainable entrepreneurship to tackle social and environmental challenges. *Journal of Cleaner Production*, 406, 137050. <https://doi.org/10.1016/j.jclepro.2023.137050>
- Shahid, S., & Reynaud, E. (2022). Individuals' sustainability orientation and entrepreneurial intentions: The mediating role of perceived attributes of the green market. *Management Decision*, 60(7), 1947–1968. <https://doi.org/10.1108/MD-01-2021-0151>
- Shehri, T. A., Braun, J. F., Howarth, N., Lanza, A., & Luomi, M. (2023). Saudi Arabia's Climate Change Policy and the Circular Carbon Economy Approach. *Climate Policy*, 23(2), 151–167. <https://doi.org/10.1080/14693062.2022.2070118>
- Sheikh, A. (2022). *How Developing a Circular Economy Requires Concerted Efforts*. *Gulf Business*. Available online: <https://gulfbusiness.com/en/2021/economy/how-developing-a-circular-economy-requires-concerted-efforts/>
- Shepherd, D. A., & Patzelt, H. (2011). The New Field of Sustainable Entrepreneurship: Studying Entrepreneurial Action Linking “What is to be Sustained” with “What is to be Developed.” *Entrepreneurship Theory and Practice*, 35(1), 137–163. <https://doi.org/10.1111/j.1540-6520.2010.00426.x>
- Spaltini, M., Poletti, A., Acerbi, F., & Taisch, M. (2021). A quantitative framework for Industry 4.0 enabled Circular Economy. *Procedia CIRP*, 98, 115–120. <https://doi.org/10.1016/j.procir.2021.01.015>
- Stahel, W. R. (2016). The circular economy. *Nature*, 531(7595), 435–438. <https://doi.org/10.1038/531435a>
- Stefan Schaltegger. (2002). *A Framework for Ecopreneurship Leading Bioneers and Environmental Managers to Ecopreneurship*. Greenleaf Publishing. <https://www.jstor.org/stable/greemanainte.38.45>

- Stevens, R., Moray, N., & Bruneel, J. (2015). The Social and Economic Mission of Social Enterprises: Dimensions, Measurement, Validation, and Relation. *Entrepreneurship: Theory and Practice*, 39(5). <https://doi.org/10.1111/etap.12091>
- Terán-Yépez, E., Marín-Carrillo, G. M., Casado-Belmonte, M. D. P., & Capobianco-Uriarte, M. D. L. M. (2020). Sustainable entrepreneurship: Review of its evolution and new trends. *Journal of Cleaner Production*, 252, 119742. <https://doi.org/10.1016/j.jclepro.2019.119742>
- Tukker, A. (2015). Product services for a resource-efficient and circular economy – a review. *Journal of Cleaner Production*, 97, 76–91. <https://doi.org/10.1016/j.jclepro.2013.11.049>
- UNWTO. (2004). *Indicators of sustainable development for tourism destinations: A guidebook*. Retrieved from <https://www.e-unwto.org/doi/book/10.18111/9789284407262>
- UNWTO. (2019). *International tourism highlights*. Retrieved from <https://www.e-unwto.org/doi/book/10.18111/9789284421152>
- UNWTO. (2017). *2017 is the international year of sustainable tourism for development*. Retrieved from <http://www.unwto.org/archive/global/press-release/2017-01-03/2017-international-year-sustainable-tourism-development>
- Urbaniec, M., Sołtysik, M., Prusak, A., Kułakowski, K., & Wojnarowska, M. (2022). Fostering sustainable entrepreneurship by business strategies: An explorative approach in the bioeconomy. *Business Strategy and the Environment*, 31(1), 251–267. <https://doi.org/10.1002/bse.2885>
- Waligo, V. M., Clarke, J., & Hawkins, R. (2013). Implementing sustainable tourism: A multi-stakeholder involvement management framework. *Tourism Management*, 36, 342–353. <https://doi.org/10.1016/j.tourman.2012.10.008>
- Watson, R., Nielsen, K. R., Wilson, H. N., Macdonald, E. K., Mera, C., & Reisch, L. (2023). Policy for sustainable entrepreneurship: A crowdsourced framework. *Journal of Cleaner Production*, 383, 135234. <https://doi.org/10.1016/j.jclepro.2022.135234>
- World Tourism Organisation (WTO). (1996). *What Tourism Managers Need to Know: A Practical Guide to the Development and Use of Indicators of Sustainable Tourism*. <https://www.e-unwto.org/doi/book/10.18111/9789284401017>
- World Tourism Organization. (2020). *International Tourism and Covid-19*. Available online: <https://www.unwto.org/international-tourism-and-covid-19>
- Yusuf, N., & Lytras, M. D. (2023). Competitive Sustainability of Saudi Companies through Digitalization and the Circular Carbon Economy Model: A Bold Contribution to the Vision 2030 Agenda in Saudi Arabia. *Sustainability*, 15(3), 2616. <https://doi.org/10.3390/su15032616>
- Zeng, H., Chen, X., Xiao, X., & Zhou, Z. (2017). Institutional pressures, sustainable supply chain management, and circular economy capability: Empirical evidence from Chinese eco-industrial park firms. *Journal of Cleaner Production*, 155, 54–65. <https://doi.org/10.1016/j.jclepro.2016.10.093>
- Zoppelletto, A., & Bullini Orlandi, L. (2022). Cultural and digital collaboration infrastructures as sustainability enhancing factors: A configurational approach. *Technological Forecasting and Social Change*, 179, 121645. <https://doi.org/10.1016/j.techfore.2022.121645>