

Research Article

A Conceptual Model of Creative Tourism with a Sustainable Development Approach for Kish Island, Iran

Mozhgan Sabet Teimouri^{1, *}, Ali Rahnama², Roshan Babaei Hemati³, Elmira Rostami¹, Alan Forghani⁴

¹Department of Tourism Management and Planning, Institute of Tourism Research, Academic Center for Education, Culture and Research (ACECR), Tehran, Iran

²Department of Tourism Economy, Institute of Tourism Research, Academic Center for Education, Culture and Research (ACECR), Tehran, Iran

³Department of Tourism, University of Guilan, Rasht, Iran

⁴Science, Technology, Engineering and Mathematics, University of South Australia, Adelaide, Australia, Faculty of Science & Technology, University of Canberra, Canberra, Australia

Abstract

This study investigates the potential of developing creative tourism on Kish Island, Iran, focusing on its viability as a sustainable tourism destination within the Kish Free Zone. Creative tourism offers visitors opportunities to actively engage in cultural and innovative experiences, fostering collaboration between tourists and local communities to create unique tourism products. The research highlights how creativity can enhance competitive advantages, stimulate economic growth, and support cultural preservation. Drawing comparisons with the Nazaré Criativa project in Portugal, the study suggests that governmental support could amplify such initiatives on Kish Island. Utilizing Geographic Information Systems (GIS) analysis, the research evaluates ecotourism potential by integrating ecological, social, and economic indicators for sustainable planning. The methodology combines qualitative and quantitative approaches, including literature reviews, field observations, and Structural Equation Modeling (SEM) using SmartPLS software. The results reveal that resources significantly impact tourism development ($t=25.727$), while organizational factors drive creative attractions ($t=2.936$). Infrastructure positively influences development ($t=1.704$), but has a negative effect on creativity (-0.228), indicating the need for balanced management. The study proposes a conceptual model for e-tourism development, emphasizing a comprehensive tourism portal to enhance accessibility and the visitor experience. Commercialization models (e.g., Rourke, Song, and Gibson) are analyzed to transform creative ideas into marketable products, supporting local entrepreneurship. The findings underscore the importance of infrastructure, organizational leadership, and cultural heritage in fostering creative tourism. Recommendations include leveraging Kish Island's natural and historical assets, integrating technology, and promoting local handicraft workshops to attract diverse tourists. This approach aims to empower local communities, ensure environmental sustainability, and position Kish Island as a leading creative tourism destination by 2039.

*Corresponding author: m.s.teimouri@acecr.ac.ir (Mozhgan Sabet Teimouri)

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Keywords

Aqua Tourism, Creativity, Free Trade Zone, SmartPLS4 Software, Spatial Modeling, GIS, Tourism Development, Variance-based Structural Equation Modeling

1. Introduction

Creative tourism provides visitors with the opportunity to develop their creative potential through active participation in courses and learning experiences, where tourists and local people collaborate to create new and innovative tourism products. Creativity enables destinations to discover competitive advantages over other places. These innovative products can contribute to economic and cultural development, generate income, and create jobs for entrepreneurs and cultural officials by leveraging various potentials in design, production, and effective marketing. In essence, creative tourism strengthens the producer-consumer relationship, fostering social and intellectual capital for both tourists and local suppliers, particularly those involved in culture, museums, and related activities.

A key driver of innovation in tourism is the diversity within the socio-cultural context, which includes the individual. Cultural diversity plays a crucial role in strengthening and accelerating innovative tourism processes and activities, as highlighted in the results of this paper [4, 7].

The pilot project for creative tourism at Nazaré Criativa, initiated by Quico Turismo/Casas de Quico, is a family vacation rental business based in Nazaré that demonstrates how creative tourism initiatives can achieve sustainable tourism. Before launching the Nazaré Criativa project, Casas de Quico was already closely involved with local innovators, organizations, and institutions. The project promotes cultural heritage, traditional living, and unique experiences in Nazaré through collaboration with local partners. Projects like Nazaré Criativa could advance further with more support from the central government or tourism institutes as part of a broader national or regional strategy to promote the creative experiences of the Portuguese people [20]. This issue is a central theme in the present research.

Various factors such as vegetation, water resources, wildlife, altitudes, and more have been studied using GIS to evaluate lands with ecotourism potential in Surat Thani Province, Thailand (Bunromakou *et al.*, 2011). Similar factors have also been examined on Kish Island. The application of GIS in data collection, analysis, and the measurement of the economic potential of ecotourism has been explored. This study examined the role of GIS analysis in environmental management and ecotourism, particularly in the context of sustainable tourism [16]. In a study titled *Ecotourism Planning for West Midnapore, India*, GIS was used to identify natural and cultural attractions and assist in ecotourism planning. The study

first extracted the study area from satellite images, provided necessary information layers, and created an ecotourism potential map by combining land use and land cover maps with soil fertility and ecological properties [6].

Research on *Tourism Development Strategies in Iran* highlighted that urban tourism is a dominant form of tourism and can be the top choice for both domestic and foreign tourists [1]. According to this research, Kish Island has significant potential for urban tourism, making it an attractive destination for tourists.

Tourism is a key driver of creative development in historical contexts, and the creative city theory serves as a planning paradigm in an era where the globalization of various aspects of human life is a critical issue. This theory emphasizes the growing importance of creativity and culture in the economy, underscoring the need for specialized and distinctive spaces. The results of the study indicate that the trajectory of urban improvement and modernization, initially focused on economic, social, and physical aspects, has shifted from one-sided and partial perspectives toward a more holistic approach [19]. This research also explores the cultural and economic dimensions of urban development.

The southern coast of Kish Island can be divided into two categories: physical elements (such as physical structures, vegetation, and animals) and content elements (including cultural, human, and historical aspects). Given that the study area in this research is an island, all these factors have been examined, leading to similar results.

Today, the primary approach to utilizing local attractions, beaches, and features for tourism purposes is based on the principles of sustainable development. This approach considers three main groups of indicators: ecological and environmental, social and cultural, and economic and livelihood. It aims to provide a solution for the sustainable economic exploitation of attractions, indigenous beaches, and features, with the goal of empowering the local community while preserving the natural environment [25].

Elements of the southern coast of the island are categorized into two parts: physical elements (including physical structures, vegetation, animals, and man-made elements) and content elements (encompassing cultural, human, and historical aspects). As the study area is an island, all these factors have been examined, leading to similar findings.

Currently, the primary approach to utilizing local attractions, beaches, and features for tourism is rooted in the sus-

tainable development paradigm. This approach involves three key groups of indicators: ecological and environmental, social and cultural, and economic and livelihood. The goal is to provide solutions for the sustainable economic use of local attractions, beaches, and features, empowering the local community and preserving the natural environment.

Experimental research on the maturity level of creative tourism has identified certain gaps that could result in incompatibilities and interference [5].

Research on sustainable development in creative tourism indicates that new forms of tourism development require the creation and enhancement of critical infrastructure, amenities, and differentiated activities to attract customers, aligning with Sustainable Development Models (SDGs). Types of tourism such as nature-based, rural, and cultural creative tourism are vital for sustainability and regional development. The findings suggest that local leaders should focus on encouraging entrepreneurship and designing guidelines that adhere to sustainable development models and SDGs for small and medium-sized enterprises. This approach would diversify tourism offerings, drive investments in cultural heritage conservation, and develop endogenous resources [8]. In this context, infrastructure is identified as a crucial component of creative tourism development.

In the new millennium, discussions on the challenges of tourism creativity districts have emerged, with a focus on the development of cultural tourism and the rise of creative tourism as a distinct subject of analysis. To stand out in the highly competitive global market, destinations have turned to creativity for inspiration. As a result, tourists, tired of similar products and crowded tourist sites, seek more localized experiences offered by creative tourism destinations. Creative districts could become essential tools for extraordinary placemaking, provided they generate new tourism creativity models [22]. This research also highlights the creation of creative areas to attract tourists.

The use of creative tourism potential through artistic crafts is one of the basic strategies for elaborating techniques, gaining experience, and acquiring necessary knowledge while also highlighting and identifying tourist experiences with Ráquira handicrafts. Future research plans should focus on creative tourism projects, offering opportunities for participating in tourists to enhance their learning experiences. Additionally, the innovative art and skills of artisans should be analyzed through various possibilities to develop the creative tourism potential based on beneficial handicrafts [9]. Handicrafts are one of the key topics discussed in this research on creative tourism development.

In research on accessibility and smart tourism, findings show which sectors of the tourism industry can adapt quickly to modern conditions, contributing to the development and dynamic execution of smart tourism in tourist attractions. As part of the 2030 Agenda for Sustainable Development, tourist attractions must be made accessible to diverse groups through cooperation between public and private organizations [3]. A

significant element of this research is the transformation of Kish Island into a smart city.

The review of uncertainty conditions in tourism innovation and resilience emphasizes the need for creative and flexible tourism strategies during times of uncertainty. Given the rise of new and impactful crises affecting the global tourism industry, increasing the awareness and resilience of tourism industry officials and policymakers is essential. They need to address upcoming challenges using innovative and flexible strategies. This underscores the importance of tourism resilience and innovation during crises, emphasizing the need for policymakers to reconsider and adapt resilient business strategies [21]. Research by Gabor et al. (2023) on innovative products in the creative tourism industry concluded that the relationship between innovative competitiveness advantages and factors such as information technology, stakeholders, experience, destination, services, and products could drive economic development, enhance performance, and support cultural heritage, rural areas, and ecotourism. Our findings align with these results [10].

2. Literature Review

The literature review on creative tourism and the application of structural equation modeling (PLS) methods highlights various studies that explore different dimensions of tourism, technology, and economic development. The following studies provide a glimpse into the innovative approaches utilized in tourism research and development:

Hew *et al.* (2017) examined the use of mobile social tourism in generating travel-related content and identified a "privacy paradox" in the context of smart tourism. Their findings underscore the role of perceived benefits and a sense of belonging in mediating content creation intentions, providing both theoretical and practical insights into user-generated content [11].

Larios-Gómez *et al.* (2021) analyzed shopping behavior during the COVID-19 pandemic across Mexico, Colombia, and Ecuador, highlighting the impact of social distancing and health protocols on consumer behavior. This study also emphasized how the pandemic has reshaped time, space, and place in tourism consumption patterns [14].

Rina (2021) explored the role of cultural contact in Mentawai, Indonesia, focusing on how interactions with local traditions, both tangible and intangible, influence tourists' intentions to revisit. The study also examined the importance of tourism English in facilitating these cultural exchanges, which are vital for enhancing cultural tourism.

Shen *et al.*, (2022) discussed the adoption of augmented reality (AR) and virtual reality (VR) technologies in tourism education amidst the pandemic. The study identified key predictors of adoption, such as perceived usefulness, hedonic motivation, and price value, thus contributing to the broader understanding of digital technology's role in tourism [24].

Liu *et al.*, (2022) investigated the factors affecting tourists'

use of smart hospitality, applying the Technology Acceptance Model (TAM) and highlighting the role of technological smartness in shaping tourists' behavioral intentions. Their study suggests that smartness influences decisions indirectly through its effects on perceptions and attitudes [15].

Martín-Navarro *et al.*, (2023) examined the impact of affective orientation on entrepreneurial intentions, finding that effectual propensity, along with attitude and perceived behavioral control, plays a critical role in shaping entrepreneurial actions. This research contributes to entrepreneurship studies by exploring the psychological aspects of entrepreneurial intention [17].

Islam (2023) focused on the adoption of self-service e-ticketing technology at heritage sites in Bangladesh, identifying ease of use, subjective norms, and privacy concerns as significant factors influencing e-ticketing adoption. The study further explored how attitude moderates the relationship between intention and usage [13].

Hsu (2023) studied the role of core competencies and resource characteristics in achieving the 2030 Sustainable Development Goals (SDGs). The research highlighted how distinctive competitive advantages mediate the relationship between core competencies and SDGs, suggesting that institutional support can further accelerate progress toward sustainability [12].

Chiwaridzo (2023) analyzed the use of renewable energy in Zimbabwe's tourism industry, emphasizing the positive relationship between renewable energy technologies, green tourism supply chain management, and energy resilience. The study demonstrated how sustainability efforts in tourism could enhance energy self-sufficiency and access [7].

Talukder *et al.*, (2024) explored creative pilgrimage tourism in Bangladesh, relying on secondary data sources. The study also examined collaboration methods between government institutions, non-governmental organizations (NGOs), and local stakeholders to achieve socio-economic benefits. The research highlights the transformative potential of creative pilgrimage tourism in Bangladesh, emphasizing its contribution to advancing the Sustainable Development Goals (SDGs) within the context of global sustainable tourism development [26].

Tapfuma *et al.*, (2024) investigated the role of creative tourism, particularly through arts and crafts, in promoting inclusive tourism in Zimbabwe. This qualitative study was conducted across multiple cities in Zimbabwe, analyzing the impact of visual arts and crafts in fostering inclusive tourism. The findings suggest that, with effective management, arts and crafts can play a pivotal role in advancing inclusive tourism by reducing poverty and improving the living condi-

tions of disadvantaged communities [27].

3. Methodology

This section outlines the research methodology employed in this study, which is centered on creative tourism development on Kish Island. The methodology integrates both qualitative and quantitative methods to explore the potential for creative tourism development based on a proposed conceptual model.

Data collection involved documentary studies, which included analyzing existing literature, articles, books, and dissertations. Additionally, field studies were conducted, which included administering questionnaires and making observations to gather real-world data. The study is descriptive-analytical and applied in nature, focusing on the evaluation of existing infrastructures and identifying areas for improvement in Kish Island's tourism offerings.

3.1. Geographical and Environmental Characteristics of Kish Free Zone

The Kish Free Trade-Industrial Zone, located in Hormozgan Province, Iran, encompasses Kish Island, along with other areas like Hendourabi and Farvar islands. The zone is managed by the Organization of Free Trade-Industrial Zones of Iran. Kish Island is notable for its recreational offerings and historical significance as a center of trade between India, Iran, and Mesopotamia. Historically, the island was known for its pearl trade.

Kish Island is a coral island in the Persian Gulf, covering an area of 91.5 square kilometers. The island's shape is oval, and it is situated at 26°33'15" N latitude and 54°01'30" E longitude, roughly 1,359 kilometers south of mainland Iran, near the Strait of Hormuz. The distance between the west coast and the east coast is approximately 15.45 kilometers, while the maximum width of the island is 7.5 kilometers.

This island, being part of Iran's free trade zone, offers significant potential for tourism development due to its natural beauty and historical significance. The island's infrastructure, including transportation networks, hotels, and recreational centers, plays a crucial role in attracting tourists, including those interested in creative tourism experiences.

The study aims to explore how these geographical, environmental, and infrastructural characteristics can be leveraged to develop creative tourism on Kish Island, making use of innovative ideas and technology to enhance the visitor experience and expand tourism offerings.



Figure 1. Kish Island Road Network; Google Source: Inheritance.2021.

The surface of Kish Island is relatively flat, lacking notable topographical features such as mountains or high hills. The island's highest point, situated at Kish International Airport, is about 35-40 meters above sea level. The most significant slope on the island extends from the airport area to the beach near the Shayan Hotel. These geographical features make Kish Island particularly attractive for international tourists, especially from European countries who seek to explore Iran and experience non-tropical beaches, especially during Europe's colder seasons. The ease of accessibility, alongside the island's unique geographical setup, provides a solid foundation for the development of tourism, making it an ideal destination for visitors looking for a blend of history, culture, and natural beauty.

The flatness of the island, combined with the airport's central location, simplifies infrastructure development. The strategic positioning of Kish International Airport also enhances the island's connectivity to global destinations, making it more appealing for both short-term and long-term visits.

Given these advantages, the development of creative tourism spaces and the creation of innovative attractions are essential. By focusing on such attractions, Kish Island can continue to attract and increase the number of non-native tourists, expanding its market beyond traditional tourist demographics.

3.2. Strategic Leadership in Creative Tourism

To effectively manage and lead Kish Island's tourism development, especially in the context of creative and e-tourism advancements, it is crucial to take a holistic and strategic approach. This approach includes rehabilitating necessary infrastructure and utilizing communication media to foster tourism development. Below are the key components of the strategy:

- (1) Creating a Comprehensive Plan for E-Tourism: A major aspect of the strategy is to address the barriers hindering

e-tourism development, which include cultural, social, technical, and technological challenges. The implementation of a comprehensive plan aims to streamline the processes involved in e-tourism, making it more accessible and user-friendly.

- (2) Developing a Comprehensive Tourism Portal: A unified, integrated platform will serve as a central hub for all e-tourism services on Kish Island. This website will provide key features, including:
 - a) All-in-One Service Offering: The portal will centralize tourism services, making it easier for users to access information and services related to travel, accommodations, attractions, and more.
 - b) Time and Cost Savings: By providing an integrated platform, users can save both time and money when planning their visit to Kish Island.
 - c) Multilingual Support: The platform will offer services in multiple languages, including those spoken in neighboring countries, thus catering to a global audience and making the island more accessible to international tourists.

3.2.1. Proposed Model for E-Tourism

Given the unique cultural, economic, and social conditions of Kish Island, as well as its natural potential for ecotourism, the Deming Cycle model is proposed for the development and implementation of e-tourism. This model is a continuous improvement cycle designed to ensure that tourism development is effectively managed, flexible, and adaptable to changing circumstances. The stages of the Deming Cycle are as follows:

- (1) Design and Planning: This stage involves the initial conceptualization and strategic planning of e-tourism services and infrastructure. This phase should address all aspects of e-tourism development, including user

needs, technological requirements, and the alignment of services with the island’s cultural and environmental characteristics.

- (2) Implementation: The implementation phase involves translating the design into action. This includes the development and launch of the tourism portal, integration of services, and establishment of the necessary infrastructure to support e-tourism on the island.
- (3) Inspection and Control: Once the system is implemented, it is crucial to continuously monitor and evaluate the performance of the e-tourism platform. Feedback mechanisms will be used to assess the effectiveness of services and identify any challenges or areas for improvement.
- (4) Corrective Action: Based on the inspection and evaluation process, corrective measures will be taken to address any shortcomings or inefficiencies in the system. This ensures the continuous improvement of e-tourism services and contributes to the long-term sustainability of tourism development on the island.

By employing the Deming Cycle approach, the development and management of e-tourism on Kish Island can be systematically managed, ensuring continuous growth and adaptation to the needs of global tourists.

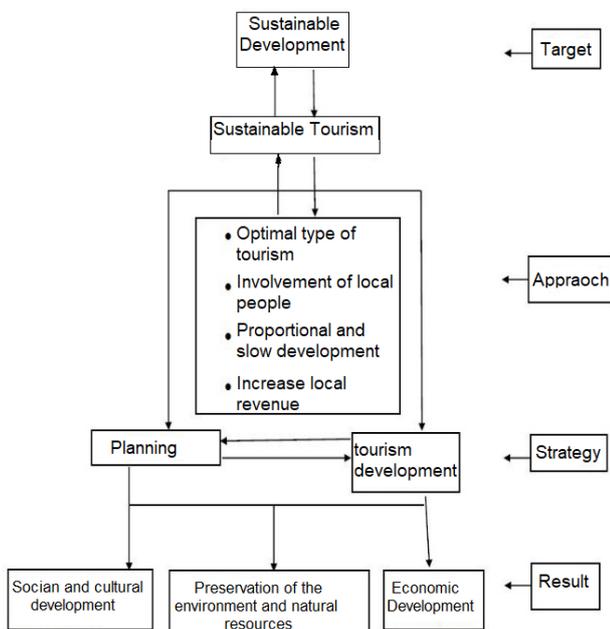


Figure 2. The role and relationship of planning with sustainable tourism development.

3.2.2. Creative Industries

Creative industries have gained significant recognition as the primary drivers of modern economic development. As the world moves away from traditional "hard industries" and towards more knowledge-based sectors, creative industries have emerged as key contributors to economic growth. The

shift from industrial-driven to idea-driven development, often referred to as the transition to the "intellectual paradigm," is an ongoing process that can be both challenging and complex (Maleki, 2015).

Creative industries include a range of sectors that combine creativity, knowledge, and culture to produce innovative products and services. The United Nations Conference on Trade and Development (UNCTAD) defines these industries as those involved in cycles of innovation, production, and distribution of both tangible and intangible products. They represent a fusion of arts, culture, media, and design, which lie at the intersection of the crafts, services, and industrial sectors, creating a dynamic sector in global trade [28].

Creative industries can be divided into four categories:

- (1) Heritage – Preserving and promoting cultural traditions and artifacts.
- (2) Arts – Visual and performing arts that generate cultural and artistic expressions.
- (3) Media – Content creation, production, and distribution through various channels, including television, radio, and digital platforms.
- (4) Functional Creations – Products that combine creativity with utility, such as design and technology.

Creative industries bring numerous benefits across economic, environmental, social, and cultural spheres. These sectors help foster sustainable economic growth while simultaneously contributing to cultural and artistic heritage preservation.

3.2.3. Creative Industries Marketing

With the growing importance of sustainability in science and politics, creative industries have risen as a powerful tool for achieving long-term stability in an increasingly volatile world. The emergence of the new economy, characterized by innovative consumption patterns and organizational strategies, highlights the significance of creativity in driving economic activities. This new economy promotes creativity as a fundamental element of experimental and creative economics [23]. Creative industries, particularly in tourism, have embraced this shift, applying new forms of marketing and outreach to attract both consumers and businesses, contributing to their dynamic growth.

3.2.4. Creative Industry Drivers

The rapid growth of creative industries worldwide can be attributed to several driving forces, including technological advancements, increasing demand, and the expanding role of tourism. The relationship between creativity and technological progress is clear; as technological innovation flourishes, creative industries leverage new tools and platforms to enhance their products and services.

Innovation is at the heart of creative industries, driving them forward by fostering new ideas and opportunities. Creativity acts as a powerful driver of economic and social development, enabling the creation of skilled individuals and

entrepreneurial ventures. The incorporation of creativity into business and tourism sectors has led to innovative solutions that address global challenges and redefine how tourism and leisure industries operate [18].

3.2.5. Commercialization

Commercialization refers to the process of transforming a creative idea or product into a viable business offering. This stage involves applying innovative ideas to create new products, services, or processes that drive economic growth. By introducing new products into the business cycle, commercialization promotes job creation, increases national income, and fosters business profitability [2]. For the tourism industry, commercialization can involve turning creative and cultural resources into marketable attractions and experiences, enhancing the local economy and providing sustainable business opportunities.

3.2.6. Key Elements of the Tourism System

A tourism system is composed of three essential elements:

- (1) Tourists – The individuals or groups who travel to a destination.
- (2) Geographical Factors – The physical and environmental characteristics that influence tourism development, such as landscapes, climate, and infrastructure.
- (3) Tourism Activity – The actions, services, and experiences that tourists engage in at the destination, including attractions, accommodations, and cultural experiences.

Understanding the interactions and relationships between these elements is crucial for developing sustainable tourism systems that cater to both tourists and the destination's long-term development goals.

3.3. Conceptual Model

Conceptual modeling plays a crucial role in the early stages of developing tourism systems and systems simulations. It provides a structured framework to understand the system, clarify requirements, and enhance communication between stakeholders. A conceptual model serves as a foundation for the design, verification, and validation of tourism projects, ensuring that they align with user needs and objectives.

In the case of Kish Island, the conceptual model is vital for addressing the challenges of unbalanced development and improper management. Kish's beaches, attractions, and unique features have established it as a major tourist destination, yet its development has often been uncoordinated. There has been a lack of a comprehensive management plan, resulting in inefficient use of the island's natural resources. To remedy this, a holistic approach to upgrading studies, integrating them, and coordinating efforts across departments is essential. By focusing on sustainable tourism principles, the aim is to achieve a balance between development and environmental preservation.

As part of the conceptual model, an emphasis is placed on creating innovative regions that align with sustainable tourism theory. This includes leveraging the island's natural and coastal spaces, applying innovative design principles, and upgrading infrastructure in a way that enhances both functionality and aesthetics. A feasibility study of this concept will help determine the potential for creating an economically, environmentally, and socially sustainable tourism system on Kish Island [25].

3.4. Data Analysis

To analyze the data of the study, the Kolmogorov-Smirnov test was first used to assess the normality of the variables. Based on the results, it was found that the variables were not normally distributed. Therefore, Partial Least Squares (PLS) was employed as an appropriate analysis method. Using SmartPLS software, causal and theoretical relationships between variables were predicted. The analysis results are shown in the following table, which reflects the application of PLS for non-normally distributed data (Figure 3).

Table 1. Result of Kolmogorov-Smirnov test, research variables; Source: research findings.

Variables	statistics	The significance level
Attraction and infrastructure	0.411	0.000
Resources and environment	0.381	0.000
Development	0.365	0.000
Organization	0.339	0.000
Creativity	0.329	0.000

The factor analysis conducted reveals the factors affecting creativity on Kish Island, and several items with low factor loadings were excluded from the final analysis. These excluded items had a factor loading of less than 0.4, and they are listed as follows: Sources: Items m12, m13; Organization: Items s1, s2; Infrastructure: Items zi1, zi2, zi3, zi4, zi5; and Development: Items t1, t2, t5.

These excluded items were removed as they did not meet the minimum threshold for factor loading, ensuring that only the most relevant and reliable variables were retained for further analysis.

To assess the reliability of the model, Cronbach's alpha was calculated. Overall Cronbach's alpha value was 0.891, which is greater than 0.7, indicating high reliability for the entire questionnaire.

Additionally, Cronbach's alpha values for the different categories were Creativity: 0.816. Resources: 0.823, Organi-

zation: 0.828. Infrastructure: 0.849, and Development: 0.893. Since all these values exceed the threshold of 0.7, it con-

firms that the questions related to each of these categories are highly reliable and provide a sound basis for further analysis.

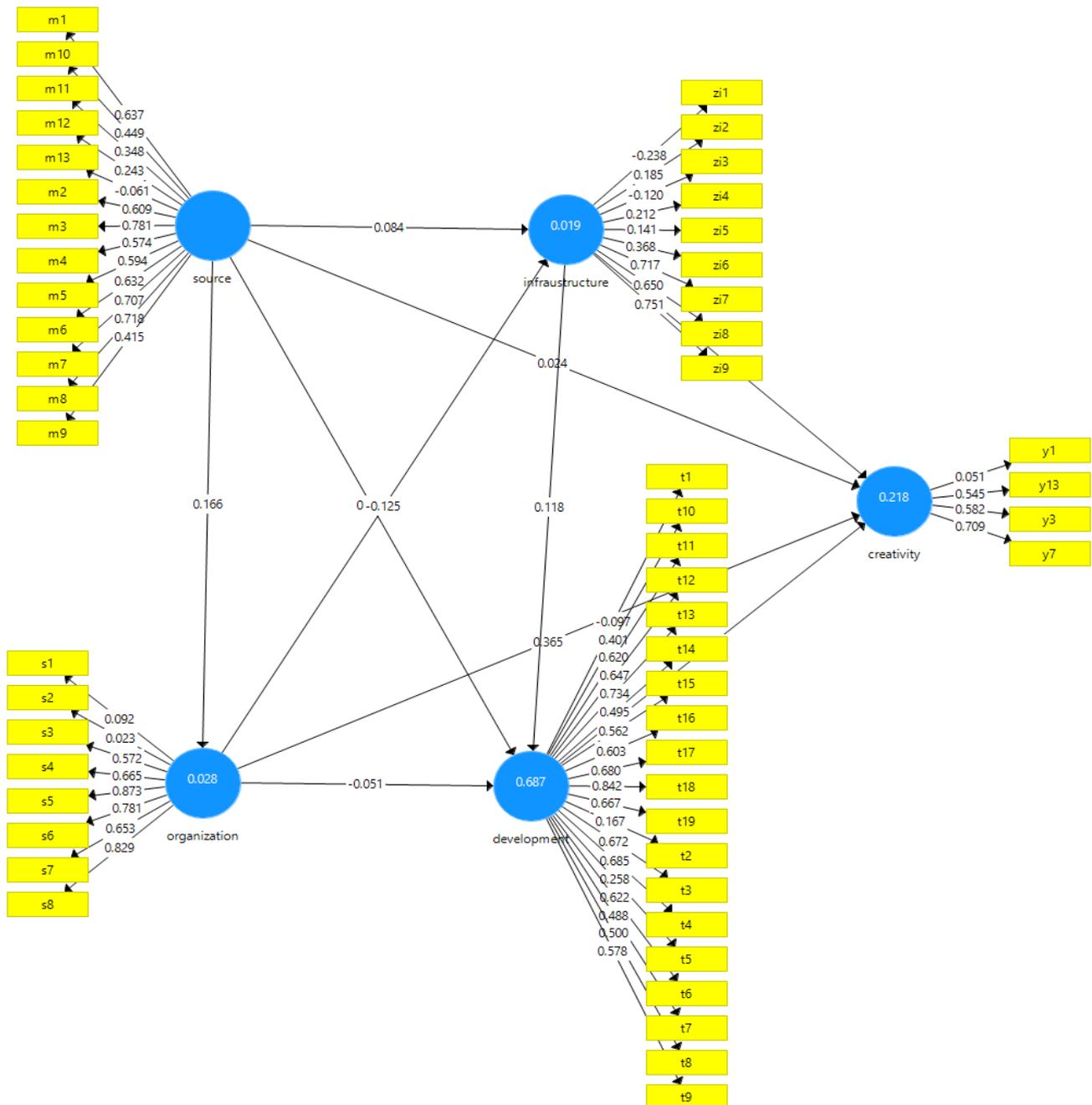


Figure 3. Factor analysis of factors affecting creativity in Kish Island.

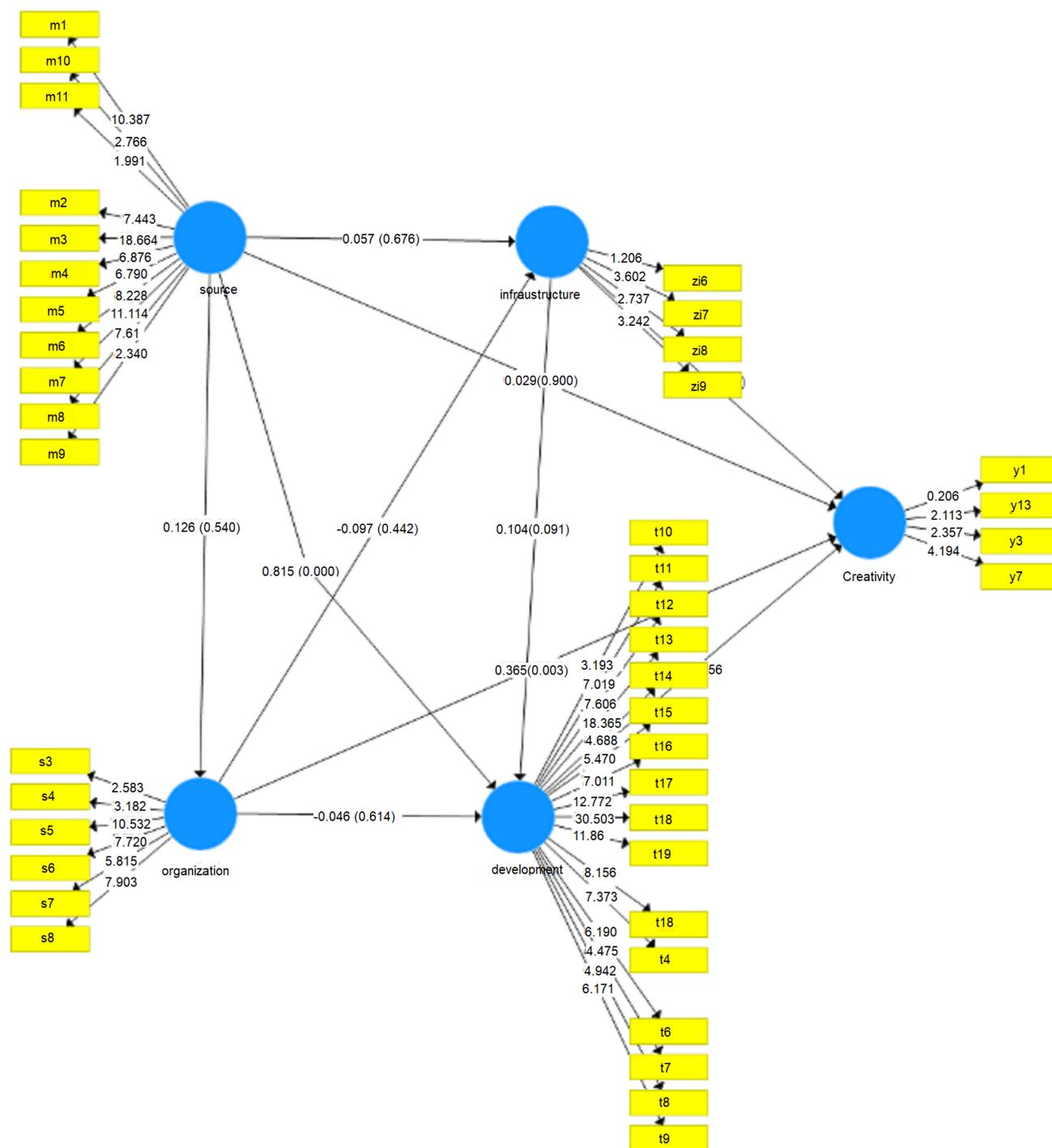


Figure 4. A T Statistic Related to Model Variables Variance.

In this section, Structural Equation Modeling (SEM) was employed using SmartPLS software to test the proposed model. A structural equation model consists of two main components including: Structural Model which represents the causal relationships between the latent (unobserved) variables; and Measurement Model that describes the relationships between the observed variables (indicators) and the latent variables.

The relationships between the research variables were tested using path analysis, based on the conceptual model of

the research.

Several indicators were used to assess the fit of the model, as the K-square test (often referred to as Goodness of Fit, or GoF) is a common measure for model evaluation but works under specific conditions. In situations where these conditions might not fully be met, other indicators are used, such as: Composite Reliability (CR), Average Variance Extracted (AVE), and Indicator Q²

These indicators help evaluate the reliability and validity of the model and ensure a good fit.

Composite Reliability (CR) indicates the internal consistency of the measurement model. It measures how much a structure (latent variable) correlates with its indicators. A higher value indicates that the latent construct has more interaction with its indicators than with other structures in the model. According to Fornell et al. (1981), the acceptable threshold for Composite Reliability is typically 0.7 or higher.

Average Variance Extracted (AVE) represents the average proportion of variance that each latent variable explains across all its indicators. It is calculated by taking the sum of the squared loadings of the indicators for each construct and dividing it by the number of indicators including: $AVE \geq 0.5$ which indicates that, on average, the construct explains more than half of the variance of the corresponding variables, which is considered good; and $AVE < 0.5$ that suggests that more error remains in the items than the variance explained by the constructs, signaling potential issues with the model's validity.

Divergent validity assesses whether a construct is truly distinct from other constructs in the model. A common rule of thumb is that for divergent validity to be acceptable, the AVE of each construct should be greater than the shared variance between that construct and any other construct. This is important to ensure that constructions are not overly similar or redundant.

In this research, the focus is on ensuring that the AVE values are greater than 0.5 and that Composite Reliability is

above the 0.7 threshold, confirming that the constructs and their indicators are valid and reliable.

By applying these metrics, the structural model and measurement model are assessed, ensuring that the research's theoretical framework holds and that the relationships between variables are robust and meaningful. These indicators (CR, AVE, and Q²) are crucial in determining the overall quality and fit of the SEM model, providing confidence in the relationships examined in the study.

This Figure 4 represents the T-Statistic related to the variance of the model variables. In structural equation modeling (SEM), the T-Statistic is often used to test the significance of the relationships (path coefficients) between the latent and observed variables. A high T-statistic (greater than 1.96) typically indicates that the relationship between variables is statistically significant. To better clarify what this figure represents: T-Statistic: It's calculated by dividing the path coefficient by its standard error. The result is used to assess whether the path coefficient is significantly different from zero (which means the relationship between the variables is meaningful); and Variance that refer to how much of the variance in the dependent variables (endogenous constructs) is explained by the independent variables (exogenous constructs). High R² values indicate that a substantial portion of the variance in a variable is accounted for by the predictors in the model.

Table 2. Some other fit indices of the final research model; (Source: research findings).

	Composite Reliability index	AVE index	Q2 Index
Creativity	0.859	0.578	0.36
Sources	0.854	0.588	0.35
Organization	0.876	0.548	0.38
Development	0.908	0.563	0.40
Infrastructure	0.753	0.558	0.41

The Table 2 presents several key fit indices used to evaluate the final research model, focusing on Composite Reliability (CR), Average Variance Extracted (AVE), and the Q² Index. Here's a breakdown of these indices and their implications for the model:

1. Composite Reliability (CR)
 - a) What it indicates: Composite Reliability is a measure of internal consistency or reliability of the model's constructs. It assesses how strongly the indicators (observed variables) of each latent variable (construct) are correlated with each other.
 - b) Acceptable threshold: A CR value above 0.7 is generally considered acceptable, indicating good internal consistency.

- c) Interpretation in this case: All the constructs in the table (Creativity, Sources, Organization, Development, and Infrastructure) have CR values above 0.7, which suggests that the model has strong internal consistency across all constructs.
2. Average Variance Extracted (AVE)
 - a) What it indicates: AVE measures the amount of variance in the indicators that is captured by the latent construct. It essentially shows how well the construction explains its observed variables.
 - b) Acceptable threshold: An AVE value above 0.5 indicates that, on average, construction explains more than half of the variance in its indicators. If AVE is below 0.5, it suggests that the construction does not

explain enough variance and may not be a good representation of the indicators.

- c) Interpretation in this case: The AVE values are all above 0.5 for each construct (Creativity, Sources, Organization, Development, and Infrastructure), which implies that the constructs adequately explain the variance in their respective observed variables.

3. Q² Index

- (1) What it indicates: The Q² index, introduced by Stone and Geisser (1975), measures the model's predictive relevance for the endogenous (dependent) constructs. A model with a strong predictive power indicates that the relationships between variables are appropriately defined, and the model is effective in predicting outcomes.
- (2) Interpretation based on thresholds (Hensler *et al.*, 2009):
 - a) A Q² value of 0.02 indicates low predictive power.
 - b) A Q² value of 0.15 indicates medium predictive power.
 - c) A Q² value of 0.35 indicates strong predictive power.

Results in this case: The Q² values range from 0.35 to 0.41 across all constructs, which indicates strong predictive power for the model. This suggests that the model has substantial predictive relevance for the endogenous variables, confirming that the relationships defined in the model are effective for prediction.

The fit indices in Table 2 confirm that the final research model has good internal consistency (Composite Reliability), adequate variance explanation (AVE), and strong predictive power (Q² Index). Specifically:

- 1) All constructions exhibit strong reliability with Composite Reliability values above 0.7.
- 2) Each construct has an AVE above 0.5, indicating they adequately explain the variance of their respective indicators.
- 3) The Q² values range from 0.35 to 0.41, demonstrating strong predictive relevance for the model.

This means the model is both internally consistent and has the capacity to predict dependent variables effectively.

3.5. Hypothesis Testing

The hypothesis testing results from the study are summarized in Figure 2 and Table 3. Here's a breakdown of the findings

based on the reported t-statistics for the various hypotheses:

Hypotheses and Their Outcomes:

1. Hypothesis 3 (Resources → Development):
 - a) t-statistic: 25.727
 - b) Significance level: Statistically significant at the 99% confidence level.
 - c) Interpretation: A one-unit increase in resources results in an increase of 0.815 units in development, assuming all other conditions remain constant. The strength of the relationship is very high, as indicated by the large t-statistics.
2. Hypothesis 5 (Organization → Creativity):
 - a) t-statistic: 2.936
 - b) Significance level: Statistically significant at the 99% confidence level.
 - c) Interpretation: A one-unit increase in organization leads to an increase of 0.365 units in creativity, assuming all other conditions remain constant. This is a moderate but statistically significant relationship.
3. Hypothesis 9 (Infrastructure → Creativity):
 - a) t-statistic: Not explicitly provided, but the result suggests a negative significant effect.
 - b) Significance level: Statistically significant at the 99% confidence level.
 - c) Interpretation: Infrastructure has a negative effect on creativity. A one-unit increase in infrastructure results in a decrease of 0.228 units in creativity, assuming all other conditions remain constant. This suggests that the increase in infrastructure, in this case, might not directly contribute positively to fostering creativity.
4. Hypothesis 10 (Infrastructure → Development):
 - a) t-statistic: 1.704
 - b) Significance level: Statistically significant (likely at the 95% level, assuming it is at least 1.645).
 - c) Interpretation: A one-unit increase in infrastructure leads to a 0.104 unit increase in development, assuming all other conditions remain constant. This relationship is weaker compared to the other hypotheses, but still statistically significant.
 - d) These results confirm several of the proposed relationships in the conceptual model, with varying degrees of strength. Some variables, such as resources and organization, have a stronger positive impact, while others, like infrastructure, have weaker or even negative effects on specific outcomes (such as creativity).

Table 3. Examining the hypotheses of the research model; Source: research findings.

	Coefficient	standard deviation	t statistic	P Values	Test result
Sources to Creative	0.029	0.232	0.126	0.900	rejection
Sources to Organization	0.126	0.205	0.613	0.540	rejection
Sources to Development	0.815	0.032	25.727	0.000	confirmation

	Coefficient	standard deviation	t statistic	P Values	Test result
Sources to Infrastructure	0.057	0.136	0.418	0.676	rejection
Organization to Creative	0.365	0.124	2.936	0.003	confirmation
Organization to Development	-0.046	0.090	0.505	0.614	rejection
Organization to Infrastructure	-0.097	0.126	0.769	0.442	rejection
Development to Creative	0.107	0.241	0.446	0.656	rejection
Infrastructure to Creative	-0.228	0.137	1.666	0.096	confirmation
Infrastructure to Development	0.104	0.061	1.704	0.091	confirmation

A key finding confirmed the hypothesis that resources positively influence development was supported, meaning that adequate economic, natural, and human resources are critical for driving the development of tourism on the island.

Resources → Creative Attractions:

Rejected: The hypothesis that resources directly lead to the creation of creative attractions was not confirmed. This suggests that, while resources are necessary, they do not directly lead to the development of innovative or creative tourism attractions on the island. This could be because the intellectual structure and management strategies play a more significant role in this regard.

Organization → Creative Attractions:

Confirmed: The hypothesis that the organization (specifically, its intellectual structure and managerial decisions) impacts the creation of creative attractions was supported. This highlights the importance of organizational leadership, management, and expertise in utilizing available resources to foster creativity and innovation in tourism attractions.

Infrastructure → Creative Attractions:

Confirmed: The hypothesis that infrastructure has a positive influence on the development of creative attractions was also confirmed. This shows that the availability of necessary infrastructure (such as transportation, facilities, and services) is crucial for developing tourism attractions that are both innovative and appealing.

Infrastructure → Development:

Confirmed: The effect of infrastructure on development was also confirmed, suggesting that infrastructure plays an essential role in the overall development of the tourism sector, not just in terms of creating creative attractions but also in supporting general tourism growth.

The results clearly indicate that infrastructure is central to both the creation of innovative attractions and the overall development of tourism on Kish Island. The relationship between infrastructure and development is particularly important, emphasizing that robust infrastructure is foundational for driving tourism growth and enabling the creation of creative and appealing attractions.

The organization's performance is a significant factor in driving the development of creative attractions, even if the

availability of resources alone is not enough. This highlights the importance of organizational management, including the expertise of managers and decision-makers, in shaping the direction of tourism development. It suggests that good governance and innovation within the organization can transform resources into creative outcomes.

Although resources are necessary for the development of tourism infrastructure, they do not directly create creative attractions. The intellectual and managerial capacity of the organization seems to be the more critical factor in converting resources into innovative tourism products and services.

The study underscores the importance of infrastructure and organization in driving both tourism development and the creation of creative attractions. Resources, while essential, play a more indirect role in fostering creativity. The results suggest that effective management and infrastructure development should be prioritized to enhance tourism innovation on Kish Island. The findings imply that leveraging intellectual resources and creative leadership can significantly shape the future of tourism on the island.

3.6. Commercialization Models

The commercialization of ideas and products is essential for transforming innovative concepts into marketable and successful ventures. Several models have been developed to outline this process, each offering a distinct perspective on how commercialization unfolds. Below are some prominent models: Cocobo Model and Song and Gibson Models. Three-Level Model of Commercialization Process and Rourke Model (Ramezanpour *et al.*, 2016).

3.6.1. Rourke Model

The Rourke Model of commercialization, initially created by DL. Rourke for the U.S. Department of Energy (USDOE), is focused on the energy technology industry. This model represents a structured approach to turning innovative products or technologies into marketable commodities. It is a modified version of the Goldsmith Model and divides the commercialization process into three key stages:

1. Innovation Stage:

- a) **Product Design:** The first step is the conceptualization and design of the innovative product or process. It involves the creation of a functional prototype.
- b) **Market Evaluation and Business Plan:** After the initial design, a market evaluation is conducted, and a strategic business plan is formulated. This stage ensures that there is a viable market for the product and establishes how the product will compete in the market.

2. Entrepreneurial Phase:

This phase is focused on finalizing all elements of the commercialization program, including:

- a) **Product Design:** Refining the product design to meet market needs.
- b) **Supply Chain Structure:** Establishing a supply chain to manufacture and distribute the product.
- c) **Pricing Plans:** Developing pricing strategies to maximize profitability and market penetration.
- d) **Financial Security:** Securing financing to support the product's development and market introduction.
- e) **Legal Requirements:** Ensuring that the product complies with all relevant legal and regulatory standards.

3. Management Stage:

The final stage involves the operational aspects of commercialization:

- a) **Prototype Development:** Finalizing the product prototype for mass production.
- b) **Distribution:** Establishing distribution channels to get the product to market.
- c) **Sales:** Marketing and selling the product to end users.
- d) **Installation and Commissioning:** Ensuring that the product is installed correctly and functions as intended once in the customer's hands.
- e) **The Rourke Model** emphasizes a phased, structured approach to commercialization, focusing on innovation, planning, and operational management as key steps for successful market entry.

3.6.2. Song and Gibson Models

The Song and Gibson Model was designed to address the limitations of traditional commercialization models by adding depth to the process. This model outlines four levels of knowledge and technology transfer, which include:

1. Creating Knowledge and Technology:

This is the first step in which knowledge and technology are developed or discovered. It involves research and development (R&D), where innovations and new technologies are born.

2. Sharing Knowledge and Technology:

Once created, knowledge and technology need to be shared among stakeholders. This sharing could happen through academic papers, partnerships, or other channels.

3. Implementing Knowledge and Technology:

At this stage, technology or knowledge is implemented in practical, real-world applications. This step is about turning

theoretical innovations into usable products or processes.

4. Commercializing Knowledge and Technology:

Finally, the technology is commercialized. This involves creating a business model, attracting investments, marketing the product, and ultimately bringing it to the market. Commercialization ensures that innovations can generate economic value.

The Song and Gibson Model emphasizes the importance of knowledge transfer at various stages, highlighting that successful commercialization is not only about creating a product but also about ensuring its proper dissemination and application in the market.

Key Differences Between Models:

- a) **The Rourke Model** is more structured and focuses on stages from innovation to market entry, with an emphasis on product development, supply chain, financial security, and legal considerations.
- b) **The Song and Gibson Model** is more focused on knowledge transfer and highlights the different stages of sharing and implementing technology as critical components of the commercialization process.
- c) Both models provide valuable frameworks for understanding how to take an idea or innovation and turn it into a product that is ready for the market. In the context of Kish Island's tourism development, these models can help guide the commercialization of creative tourism concepts and products, ensuring that ideas move from conceptualization to actual marketable attractions.



Figure 5. Diagram of Sang and Gibson business model.

The study of the commercialization process of academic research, as outlined by Goktep, provides a comprehensive framework for understanding how research findings and innovations can be transformed into products or services for industrial and service use. Given the complexities involved, Goktep's analysis divides the commercialization process into three distinct levels (Levels of Commercialization Process of Goktep):

1. **Level 1: Research Project and Research** - This level focuses on the initial stages of research and development. It includes idea generation, hypothesis formation, and conducting the necessary experiments or studies to cre-

ate new knowledge or technology. Universities and research centers typically engage in this phase to develop innovative concepts.

2. Level 2: Transfer and Commercialization Activities - After the research is completed, this stage focuses on transferring the findings to potential commercial applications. It involves activities like technology transfer, patenting, licensing, and identifying possible markets. The main aim here is to bridge the gap between academic knowledge and its application in the real world, particularly in industries or services.
3. Level 3: After Transfer and Commercialization - Once the innovation is transferred or commercialized, this stage deals with post-commercialization activities. This can include scaling the innovation, monitoring its impact, providing after-sales support, or refining the product based on market feedback. It also considers the continued role of universities and research centers in supporting the development and refinement of the product or process.

Several models are referenced in the literature relating to the widely used models of commercialization to describe how commercialization occurs. Here are some of the most prominent ones:

Rosswell and Siegfeld Model focuses on several stages of commercialization: Key characteristics includes Idea generation: the inception of the idea or innovation; Development: transforming the idea into a prototype or more refined version; Sample production: creating initial models or small batches of the product; Production: scaling up the manufacturing process; and Commercialization: introducing the product to the market; Market: Adapting the product to meet market and societal needs; The key emphasis in this model is on adapting the product to meet the demands and needs of the market and society.

Andrew Sarkin's Model highlights several key phases in commercialization including: Idea production: The initial creation of the concept or innovation; Commercialization: Taking the idea to the market, including the financial and logistical preparations; Realization: Ensuring the product meets the market's demand and works in real-world conditions; and Sarkin emphasizes the importance of entering the market quickly, minimizing liquidity losses, and focusing on pre-launch support activities like advertising, marketing, research, and development. These efforts are critical in ensuring the product's success post-launch.

Jung and Dukley Model emphasizes the integration of research and development with entrepreneurial start-up reforms. The focus here is on such as Locating: Identifying suitable locations for commercialization; Producing: Manufacturing the product or implementing the innovation; Environmental infrastructure: Ensuring the surrounding infrastructure supports the commercialization and use of the innovation. The Jung and Dukley stress the importance of creating the right environment, which includes regulatory

and infrastructure support, to successfully commercialize innovations.

Julie's Model (Usability in Developing Countries) is tailored for developing countries and addresses the unique challenges faced in these contexts. While specific details may vary, it generally focuses on adapting commercialization processes to the local market conditions, including: The need for local infrastructure and regulatory systems; and The importance of local collaboration between research institutions, businesses, and governments.

These models provide valuable frameworks for understanding the stages of commercialization, and they each offer different insights depending on the focus of the commercialization process (e.g., market adaptation, environmental infrastructure, or entering markets quickly). In practical applications, these models can guide universities, research centers, and entrepreneurs in navigating the complexities of turning academic knowledge into commercial products or services. These insights can help businesses or research institutions plan their commercialization strategies more effectively, especially in contexts where innovative ideas need to be transferred to industry and successfully marketed to end-users.

4. Conclusions and Remarks

These models discussed in this study provide valuable frameworks for understanding the stages of commercialization, and they each offer different insights depending on the focus of the commercialization process (e.g., market adaptation, environmental infrastructure, or entering markets quickly). In practical applications, these models can guide universities, research centers, and entrepreneurs in navigating the complexities of turning academic knowledge into commercial products or services.

These insights can help businesses or research institutions plan their commercialization strategies more effectively, especially in contexts where innovative ideas need to be transferred to industry and successfully marketed to end-users.

To develop an effective model for creative tourism, it's essential to gather input from various service providers involved in tourism, including municipalities, the Ministry of Cultural Heritage, Handicrafts and Tourism, hotel owners, travel service offices, tour guides, sports complexes, local communities, and tourists. Some of the key needs identified through this process include:

1. Proper planning in tourism policies: Establishing clear and effective policies that guide the development and promotion of tourism.
2. Regular management of advertising and marketing programs: Ongoing promotional efforts to keep tourism top-of-mind for potential visitors.
3. Ability to plan and implement value-added programs for accommodation units: Creating unique, value-added experiences for tourists staying in hotels and other ac-

commodation options.

4. Attracting local, national, and international tourists to visit and experience handicraft and creative tourism workshops: Drawing a diverse group of tourists to engage with local culture and creativity.
5. Establishing counters to sell handicraft products at target market workshops: Providing platforms for local artisans to sell their goods to visitors.
6. Reducing tourist sensitivity through active participation in regional cultural activities: Encouraging tourists to engage with local culture to minimize discomfort or miscommunication about traditions [25].

4.1. Developing Creative Tourism Development Strategies

To foster creative tourism on Kish Island, several critical components need to be identified:

1. Components of Creative Workshops: Understanding the role of creative workshops and what makes them appeal to tourists.
2. Tourism Seasons or Travel Time Calendars: Planning around peak tourism seasons to maximize visitor engagement.
3. Identity Elements: Incorporating local traditions, culture, and crafts to develop a unique experience.

Creative tourism not only benefits tourists but also provides local artists and communities with a platform to showcase their talents and earn a livelihood. The positive socio-economic impacts of this type of tourism contribute to the empowerment and self-confidence of local communities [25].

Perceived security is a vital consideration for tourists, as it influences their decision to visit a destination. The tourism literature categorizes risks into seven types: operational, financial, physical, psychological, satisfaction, social, and time risks [25].

4.2. Kish Free Zone Growth and Development Plan



Figure 6. Landscape of Kish Island on the horizon 2039; (Pourahmad et al., 2021).

The Kish Free Zone Organization has outlined a plan for Kish Island's growth, particularly focusing on tourism, social, and economic aspects of ecotourism. By leveraging the island's natural resources and its status as a free zone, this plan aims to increase tourism and attract more visitors, both domestic and international [25].

4.2.1. Equipping Kish for Tourism

The Kish Free Zone's strategy to commercialize creative industries involves developing technological tourism. This concept revolves around creating opportunities for leisure activities through the use of science and technology. The region plans to use its unique status to offer leisure, cultural, and technological experiences (Figure 7).

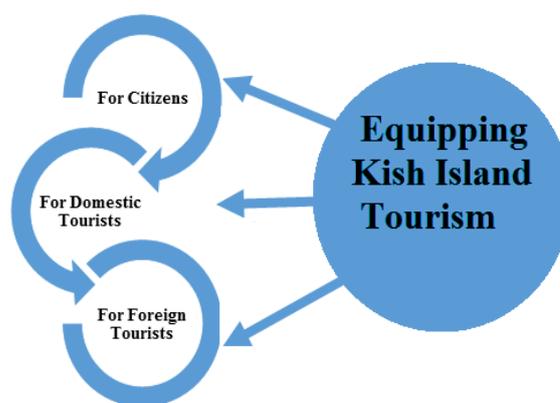


Figure 7. Concise conceptual model of tourism equipment for Kish Island.

4.2.2. Tourism as a System

Modern tourists seek experiences that go beyond traditional relaxation on beaches. They are increasingly interested in learning about environmental factors such as water, soil, and wildlife. This new trend reflects a shift in the expectations of contemporary tourists (Sabouri et al., 2008).

Tourism should be viewed as a system that includes interconnected supply and demand factors. To foster sustainable tourism, it's crucial to match these factors and ensure that tourists are provided with essential services, including:

1. High-quality accommodation and hospitality
2. Infrastructure (roads, water, electricity, telecommunications, etc.)
3. Recreational facilities
4. Leisure options (nighttime activities, medical services, insurance)

To attract foreign tourists, these basic needs must be met, with a solid foundation built in these areas, particularly in Iran.

Since the late 1980s, tourism has experienced a technological revolution with the rise of online platforms, social networks, and start-ups. New competitors are entering the market, aiming to challenge traditional businesses. This has led to a need for innovation, where creative new tourism

products and experiences are being prioritized. Creativity in tourism is vital, as an innovative product or experience can significantly enhance the tourist's experience, often more than traditional factors like price, size, or distance.

4.2.3. Creative Tourism Conceptual Model for Kish Island

A conceptual model has been proposed for creative tourism on Kish Island. It emphasizes the importance of integrating

innovation and creativity into the tourism experience, which includes elements like:

1. Unique hotels and attractions
2. Special forms of transportation
3. Special food offerings and cultural experiences
4. Opportunities to interact with local culture and arts

This model suggests a holistic approach, where creativity becomes an essential element in enhancing the tourist experience and boosting the local economy (Figure 8).

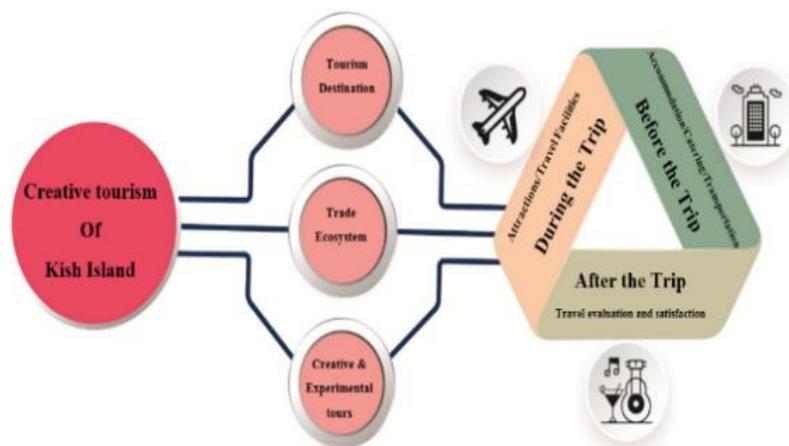


Figure 8. Concise conceptual model of creative tourism for Kish Island.

By following these strategies and models, Kish Island can transform into a hub for creative tourism, benefiting both the local community and tourists alike while fostering economic development and cultural exchange.

Abbreviations

ACECR	Academic Center for Education, Culture and Research
STEM	Science, Technology, Engineering and Mathematics
UniSA	University of South Australia
UC	University of Canberra
GIS	Geographic Information Systems
UNCTAD	The United Nations Conference on Trade and Development
SEM	Structural Equation Modeling
CR	Composite Reliability
AVE	Average Variance Extracted

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Conflicts of Interest

The authors declare no conflicts of interest.

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