Empirical Validation Of The Sitar Model: Testing The Pathways To Social-Inclusive Tourism And Indigenous Resilience

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Abstract
What ways can Indigenous tourism be used to make communities stronger? To respond to this, the researcher put a model known as SITAR to test. Surveying 200 individuals contributing to Indigenous tourism enterprises, the researcher found that there is an apparent trend with this: when communities are active in the use of their Traditional Knowledge and have a sense of control over tourism, they develop amazing resilience. In particular, the study discovered the Traditional Knowledge is useful in its application to transmit it to the subsequent generation, and this directly empowers culture. And when tours take charge of the tourism funds, they re-invest in environmentally friendly actions. The findings are an easy-to-follow evidence-based blueprint on how leaders ought to assist in the development of Indigenous knowledge and equitable governance because it is evident that the key to a truly working tourism model is to support the communities.

Keywords: SITAR Model, Indigenous Tourism, Resilience, Traditional Knowledge, Community Governance, Sustainable Development, Tourism Management.

1. Introduction

To establish sustainable tourism in Indigenous settings, it is not necessary to have good ideas, but structures that are demonstrated to be effective. Although the SITAR Model (Social-Inclusive Tourism for Adaptation and Resilience) had been created to connect the ancestral knowledge and the contemporary governance, the effectiveness of this model had to be proven in practice. The study actually does so - it gives an empirical test of the main hypotheses in the SITAR model in a rigorous manner to determine whether it works in practice or not.

SITAR model is a model which integrates 5 components frequently discussed individually, namely, the application of Traditional Knowledge (TEK), Community Governance, the knowledge acquired by youth (Intergenerational Knowledge Transfer), reinvestment of tourism money, and the social-ecological feedback loops. Although these notions may be connected in theory, nobody had ever quantified the intensity of these connections between them in a single and unified model.

That is why we came to the central research question: Do the relationships suggested in the SITAR model have the data provided by Indigenous tourism communities? The study was aimed at using a powerful statistical method (variance-based SEM) to:

- Ensure that the survey was a good measure of all concepts.
- Test the pathways of the model which are proposed.
- Test the explanatory ability of the model of its final outcomes: Cultural and Ecological Resilience.

2. Literature Review and Hypotheses Development

The SITAR model test is placed in the context of a major change in the way academics comprehend Indigenous tourism. The perspective on the field is no longer confined to economic or anthropological notions but instills the dynamic, systems-based orientation, which focuses on resilience, self-determination, and decolonisation.

This has changed under the influence of the post-colonial thought of substituting older, predominantly exploitative models with a rights-based approach. This new framework does not view Indigenous people as passive subjects as they are now active planners and the main beneficiaries of tourism, as they assert their sovereignty in culture, land, and economic benefits (Butler and Hinch, 2007; Whitford and Ruhanen, 2016; Corntassel, 2012).

The key aspect of this sovereignty is Traditional Ecological Knowledge (TEK). TEK has ceased to be considered a primitive relic and it is now regarded as a complex body of knowledge that is important in conservation and sustainability. It presents a crucial alternative to Western science and offers a real basis of tourism experiences that bring cross-cultural awareness (Berkes, 2012; Whyte, 2013; Carr et al., 2016).

But, it has been threatened by colonial legacies and out-migration of youth by passing this knowledge

to the younger generations. This renders Intergenerational Knowledge Transfer (IKT) a social phenomenon that entails oral histories and mentorship as a pillar towards cultural survival and adaptability (Ens et al., 2015; Turner and Berkes, 2006).

This emphasis on adaptation is grounded on the concept of Resilience Thinking, which assumes that the ability to absorb shocks, learn, and self-organize without losing cultural identity and being ecologically healthy is the source of Indigenous resilience- a capacity that is directly linked to the health of knowledge systems and governance (Folke, 2006; Walker and Salt, 2006; Ford et al., 2020).

More importantly, the income of tourism is no longer regarded as a panaceaum. It has been proven that money will get them into conflict and cultural commodification in the absence of good governance. This highlights the essential part of Community Agency & Governance- participatory decision-making and open revenue-sharing as the scaffolding that can make or break tourism (Manyara and Jones, 2007; Stronza and Gordillo, 2008; Zeppel, 2006).

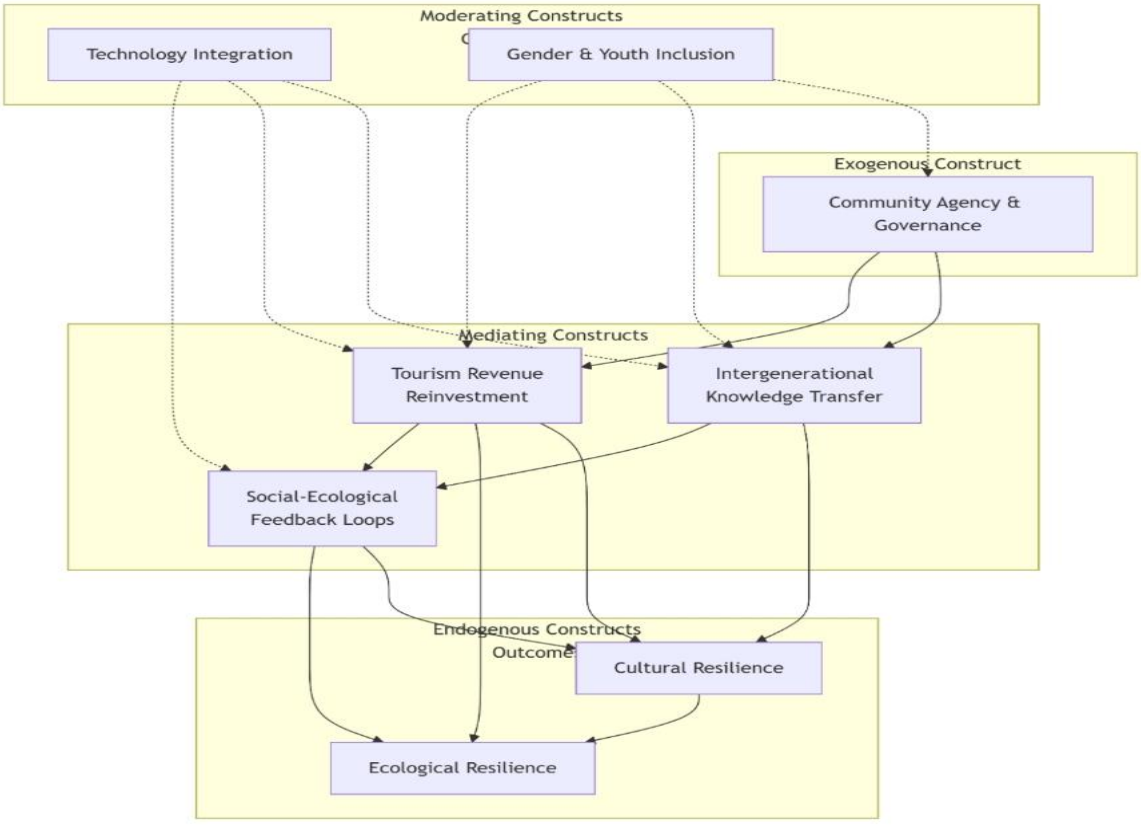
It is such efficient, culturally-based government, which allows strategic Tourism Revenue Reinvestment in social and ecological capital, such as language courses and conservation projects. The latter then triggers the Social-Ecological Feedback Loops a vicious circle in which investment reinforces cultural and ecological resources, which further supports the tourism product, which reinforces investment (Stronza et al., 2019; Farrell and Twining-Ward, 2004).

The model also touches on Indigenous Futurism which goes beyond a narrative of vulnerability and prefigures Indigenous innovation and the active construction of preferred futures where tourism emerges as a platform of sovereignty (Dillon, 2012).

Nonetheless, in spite of such theorizing there still exists a gap in knowledge: no thorough, quantitative models exist that can simultaneously test the strength and interrelationships of all such pathways. There is a gap in our study because we empirically tested the SITAR model in a way that offers a measurable framework demonstrating that the three phenomena: ancestral wisdom, fair governance, and financial management collaborate to create real, palpable resilience.

2.1 The SITAR Model Framework

SITAR model is an institutional framework that is systems based in which Institutions, Technologies and Agency, interrelate to create resilience Outcomes. In this test, the researcher is interested in the processes of core structure.



2.2 Hypotheses Development:

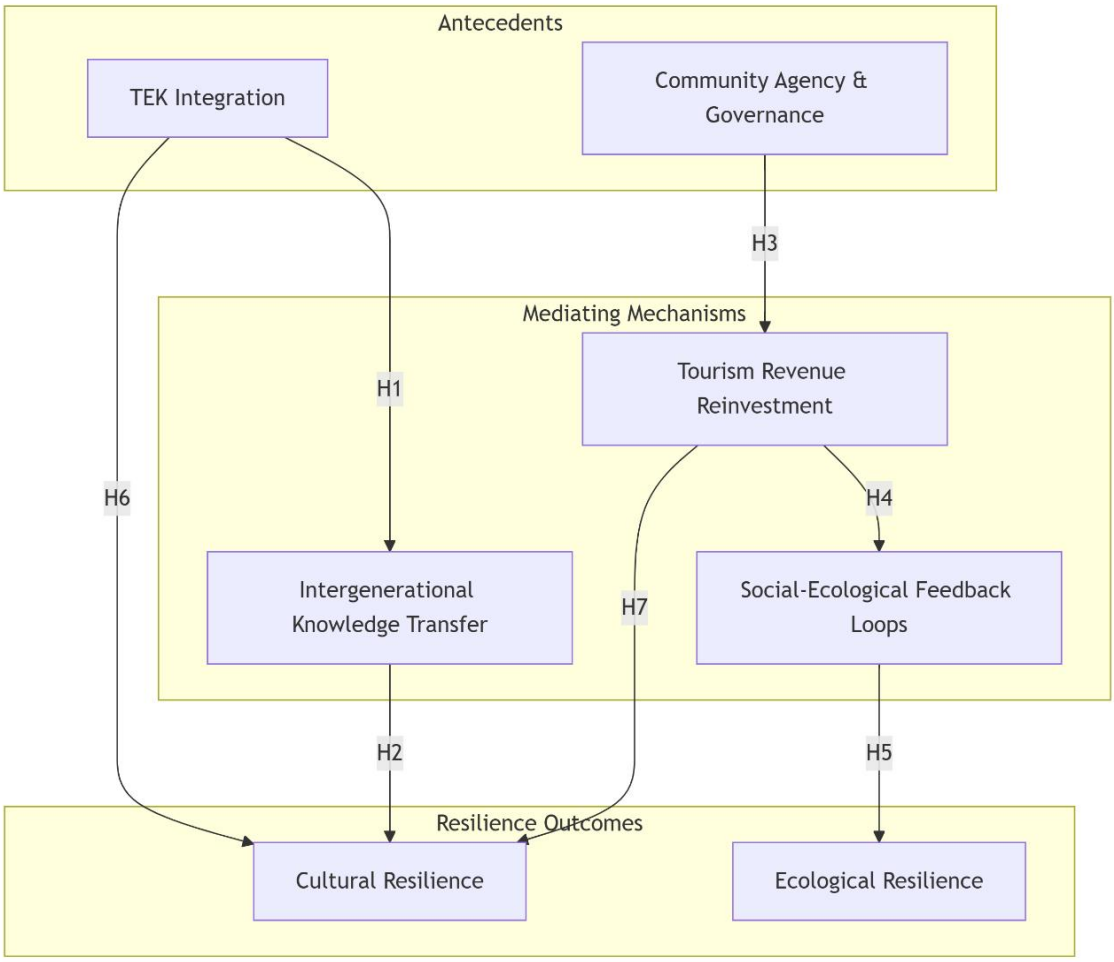
According to the hypotheses of the theoretical SITAR framework, the researcher developed the following hypotheses to test:

- H1: Traditional Knowledge (TEK) has a

positive influence on the transfer of the knowledge to the next generation (IKT).

- H2: Transfer of knowledge to the next generation (IKT) has positive reinforcement on Cultural Resilience.
- H3: There is a positive relation between Strong Community Agency and Governance and more strategic Tourism Revenue Reinvestment.
- H4: Strategic Tourism Revenue Reinvestment yields positive development of positive Social-Ecological Feedback Loops.
- H5: These Social-Ecological Feedbacks Loops have positive effects in enhancing Ecological Resilience.
- H6: There is a direct positive relation of the role of Traditional Knowledge (TEK) on Cultural Resilience, in addition to its role in knowledge transfer.
- H7: The direct positive relationship between Tourism Revenue Reinvestment and Cultural Resilience exists.

The specific model tested is shown in the figure below.



3. Methodology

3.1 Data Collection and Sample:

The data was collected through the use of a structured questionnaire that was administered to 200 respondents who were taken to be active participants in Indigenous tourism business in various communities. The survey consisted of a mixed approach to measure each construct in the model consisting of both Likert-scale questions and objective measures (e.g., the percentage of revenue reinvested).

3.2 Measurement Model Specification:

Most concepts (constructs) were measured reflectively in the study, that is, the survey questions were perceived as an expression of a latent concept. To take an example, the change in "Cultural resilience" would lead to the change in all the indicators of it, such as the cultural pride and

language use.

The research, however, addressed two constructs in a formative manner since their indicators define them and not reflect them:

- Tourism Revenue Reinvestment (TRR): It is a kind of reinvestment (in social, cultural, or environmental projects) which characterizes it. When one invests more in a particular area, it does not necessarily imply that it will invest more in another area.
- Social-Ecological Feedback Loops (SEF): Each of the various types of loop (ecological improvement, cultural strengthening, land advocacy) contributes to the total concept.

All the constructs and their measures by the researcher are summarized in the table below.

Table 1: Constructs and Measurement Indicators

Construct	Type	Indicator code	Measurementitem Description
TEK Integration	Reflective	TEK1	Use of traditional land-management practices in tourism area upkeep.
		TEK2	Inclusion of TEK and stories in the design of tourism experiences.
		TEK3	Regular consultation with elders in tourism planning.
Community Agency & Governance	Reflective	GOV1	Level of community's collective decision-making power over tourism.
		GOV2	Perceived transparency and fairness in the distribution of tourism revenues.
		GOV3	Application of customary laws in managing tourist behavior.
Intergenerational Knowledge Transfer	Reflective	IKT1	Existence of programs where elders teach youth traditional skills via tourism.
		IKT2	Frequency of storytelling and sharing of oral histories with youth.
		IKT3	Perception that youth are learning and valuing traditional knowledge.
Tourism Revenue Reinvestment	Formative	TRR1	Percentage of revenue reinvested into community social programs.
		TRR2	Percentage reinvested into cultural revitalization projects.
		TRR3	Percentage reinvested into environmental conservation.
Social-Ecological Feedback Loops	Formative	SEF1	Tourism-funded conservation improves the health of the ecosystem.
		SEF2	A observed link between tourism and the strengthening of cultural practices.
		SEF3	Tourism benefits create stronger community advocacy for land rights.
Cultural Resilience	Reflective	CR1	Strength of cultural identity and pride among community members.
		CR2	Vitality and continued use of Indigenous language.
		CR3	Confidence in the ability to adapt while maintaining core cultural values.
Ecological Resilience	Reflective	ER1	Health and biodiversity of key species in the local ecosystem.
		ER2	Quality and sustainability of water, forest, and land resources.
		ER3	Capacity of the local environment to

			recover from disturbances.

3.3 Analytical Technique:

The study used Partial Least Squares Structural Equation Modeling (PLS-SEM) as analysis software (SmartPLS 4) to analyze the data. The model could have been best suited to this technique since it works well with complex relationships of formative constructs. The analysis has been conducted in two steps:

1. This was done by the research initially to test the measurement model, so that our survey questions are reliable and measuring their intended concepts accurately.
2. This study further tested the structural model to test our hypotheses by determining the path coefficients. Researcher adopted a bootstrapping process to find the significance of these paths.

4. Results

4.1 Measurement Model Results:

The initial thing was to ensure that our survey was functioning as expected. In the case of the reflective constructs, the loaded items had strong loading on their concepts to the extent of establishing reliability and validity. In the case of the formative constructs (TRR and SEF), the researcher ensured that no problems with multicollinearity were present, i.e. that each indicator provided different information.

Table 1: Measurement Model Results (Reflective Constructs)

Construct	Indicator	Outer Loading	Composite Reliability	AVE
TEK Integration	TEK1	0.82	0.89	0.67
	TEK2	0.84		
	TEK3	0.79		
Community Agency & Governance	GOV1	0.88	0.91	0.78
	GOV2	0.89		
	GOV3	0.88		
Intergenerational Knowledge Transfer	IKT1	0.85	0.92	0.79
	IKT2	0.91		
	IKT3	0.90		
Cultural Resilience	CR1	0.81	0.88	0.65
	CR2	0.83		
	CR3	0.78		
Ecological Resilience	ER1	0.76	0.85	0.65
	ER2	0.82		
	ER3	0.83		

Table 2: Collinearity Statistics (VIF) for Formative Constructs

Construct	Indicator	VIF
Tourism Revenue Reinvestment (TRR)	TRR1	2.10
	TRR2	2.26
	TRR3	1.95
Social-Ecological Feedback Loops (SEF)	SEF1	1.88
	SEF2	2.15
	SEF3	1.92

4.2 Hypothesis Testing

The essence of the analysis was the testing of seven hypotheses. Results as indicated in the table below support the SITAR model in a good but subtle way.

Table 3: Structural Model Path Coefficients and Hypothesis Testing

Hypothesis	Path	β-coefficient	t-value	p-value	Result

H1	TEK → IKT	0.621	12.37	< 0.001	Supported
H2	IKT → CR	0.553	9.82	< 0.001	Supported
H3	Governance → TRR	0.602	10.11	< 0.001	Supported
H4	TRR → SEF	0.486	7.94	< 0.001	Supported
H5	SEF → ER	0.264	3.25	0.001	Supported
H6	TEK → CR (Direct)	0.178	2.31	0.021	Supported
H7	TRR → CR (Direct)	0.071	1.12	0.262	Not Supported

Overall Model Fit and Explanatory Power:
The model fit data was very good (SRMR = 0.039). Some of its outcomes were well explained and some more modestly explained:

- **Cultural Resilience (CR):** R^2 = 0.664. The model has been able to explain our resilience of cultures by 66.4 which is already a good outcome.
- Intergenerational Knowledge Transfer (IKT): R2 = 0.386
- Tourism Revenue Reinvestment (TRR): R2 = 0.362.
- Social-Ecological Feedback Loops (SEF): R2 = 0.236.
- **Ecological Resilience (ER):** R^2 = 0.070. This model can explain only 7 percent of ecological resilience meaning that there are numerous other external factors that are in play.

4.3 Interpretation of the Results

1. The Supported Pathways (H1-H6): The information substantially supports the essence of the SITAR model. The Traditional Knowledge (TEK) is an influential motivator of transmitting it to the next generation (H1), which is in its turn the strongest predictor of Cultural Resilience (H2). It is also true that good Community Governance is essential in order to channel tourism funds into strategic reinvestment (H3), which in turn can cause good Social-Ecological Feedback Loops (H4). The notable direct impact of TEK in Cultural Resilience (H6) supports the other idea that traditional knowledge is inherently valuable in terms of cultural resilience, not solely in terms of teaching and learning.
2. The Critical Non-Supported Hypothesis (H7): H7 was not supported which is quite deep. It shows that cultural resilience does not, in itself, come to pass if all that is done is to reinvest the money. The effectiveness of the financial investment requires that it should be channelled via the appropriate social processes, i.e. in terms of facilitating the process of knowledge transfer between generations. This implies that cultural resilience cannot be purchased using money alone.
3. Model Performance: The explanatory power of the Cultural Resilience is very large indicating that the model is very successful in describing what leads to cultural strength. The poor explanatory ability of Ecological Resilience is an important result and weakness, and it is evident that the future of ecological study requires addition of more variables (such as climate change or industrial pressure) in order to explain the ecological consequences comprehensively.

5. Discussion

The empirical study is a solid indicator in the fundamental structure of the SITAR model. The strong association between the application of Traditional Knowledge (TEK) and its transmission to the youth (IKT), and subsequently to Cultural Resilience is a key aspect that illustrates one key fact: TEK is not a lifeless resource. Whether it can continue to maintain culture is purely based on whether it is being actively passed to the young generations. This implies that it is as important to preserve the living knowledge as it is to preserve material objects or terrain.

The ecological resilience model proposed a chain of governance to ecology, that can be confirmed by the supported pathway of Governance to Revenue Reinvestment to Feedback Loops, and then to Ecological Resilience. Strategic financial reinvestment can only begin with effective community governance, and subsequently give rise to positive cycles that can cause benefit to the society and the environment. The less important yet still present connection with ecological resilience indicates that this pathway does exist and the ecological health is exposed to numerous

external factors that a tourism model cannot encompass.

One of the most interesting results is the non-significant one of H7. It conveys a very direct message, which is that it is not sufficient to fund projects on culture. The cultural vitality is the ingredient which is the process of intergenerational engagement. Financial capital should be transformed into social and knowledge capital to be significant.

6. Conclusion and Implications

6.1 Theoretical Implications:

This study shifts the scholarly debate on Indigenous tourism to plausible to causal. The research prove the vital mediating functions of Intergenerational Knowledge Transfer and Tourism Revenue Reinvestment by empirically validating a comprehensive model. The removal of H7 provides a critical point, which is that financial investment and knowledge systems are inseparable; one cannot alternate the other in the realization of cultural results.

6.2 Practical Implications:

Our evidence-based model provides a strategic direction on what to do to Indigenous leaders, policymakers, and other supporting organizations:

- Focus on Knowledge Transmission: Invest in both formal and informal activities that provide areas of interactions between the elder and the youth. The cultural resilience can be best leveraged by knowledge transfer.
- Strengthen Governance First: Incentives to increase tourism income will work best in environments where there is already a firm established governance that is transparent, equitable, and which has cultural foundations.
- Measure What Truly Matters: Get out of only measuring financial profits. In measuring the actual resilience, communities must also be able to keep track of factors concerning knowledge transfer, community health and environmental health.

6.3 Limitations and Future Research:

The study has limitations. Its cross-sectional structure does not allow us to make any conclusive statements regarding a causal relationship through time. Moreover, the relatively low explanatory capability of the model of ecological stability suggests that future studies should incorporate more variables, e.g. particular climate stresses or broader policy contexts. The evaluation of SITAR model in various geographical and cultural settings will also increase its generalizability and improve its uses.

To sum up, the SITAR model has been tested and proven to be a powerful model in interpreting and promoting resilience in Indigenous tourism. It confirms that the gap between traditional wisdom and contemporary rule is not only essential but is also shown to be an effective way of creating stronger and more stable communities.

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