

From Case Narratives to Causal Inference: A Paradigm Shift in Sustainable Tourism Research

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Abstract—Sustainable tourism research is crucial for guiding industry practices and policymaking. However, current research exhibits an over-reliance on case narratives and descriptive methods. While this approach provides rich contextual descriptions for understanding complex tourism phenomena, it has significant limitations in establishing causal relationships, developing generalizable theories, and offering precise policy guidance. Through a systematic review and critical reflection on the existing literature, this paper argues for the necessity and urgency of a paradigm shift from traditional case-narrative research to modern causal inference methods. The paper first analyzes the contributions and inherent weaknesses of the case-narrative paradigm. It then systematically introduces the application potential of causal inference methods such as Difference-in-Differences (DID), Instrumental Variables (IV), and Propensity Score Matching (PSM) in tourism research. This paper constructs an integrated analytical framework that combines case studies with causal inference, aiming to bridge the gap between qualitative description and quantitative attribution. The study finds that this paradigm shift can not only enhance the scientific rigor and theoretical contribution of sustainable tourism research but also provide reliable empirical evidence for policy evaluation and practical interventions. Finally, the paper offers specific recommendations for researchers and journal reviewers to jointly promote sustainable tourism research towards a new stage of greater explanatory power and practical value.

Keywords—Sustainable Tourism, Research Paradigm, Causal Inference, Case Study, Methodology

I. INTRODUCTION

As a key pathway to address global environmental change, promote regional economic development, and preserve cultural heritage, sustainable tourism has become a focal point for both academia and the policy community [1]. Against this backdrop, high-quality academic research is essential for revealing the complex dynamics of sustainable tourism systems, evaluating the effectiveness of policy interventions, and guiding industry practices toward true sustainability. However, despite a wealth of research, methodological path dependence has become increasingly prominent, limiting the deepening of the field's knowledge base and theoretical contributions [2].

Currently, the field of sustainable tourism research is largely dominated by qualitative, descriptive case studies [3]. This research paradigm, centered on case narratives, excels at providing in-depth, detailed portrayals of tourism phenomena in specific contexts. It offers rich qualitative

material and intuitive understanding of local community responses, tourist motivations, and the implementation processes of tourism projects [4]. Undeniably, these narrative studies played a vital role in the early stages of the discipline's development, laying the groundwork for initial theory building and exploratory analysis.

However, as sustainable tourism practices deepen and the problems they face become more complex, the methodological limitations of relying solely on case narratives are increasingly apparent. First, such research is weak in identifying and testing causal relationships between variables. For instance, we often observe an increase in local residents' income after the implementation of an ecotourism policy, but case narratives struggle to clearly disentangle the policy's true effect from the confounding impacts of other concurrent economic and social factors. That is, they cannot answer the core question: "To what extent was the income increase 'caused' by the policy?" [5]. Second, conclusions drawn from single or a few cases are often questioned for their external validity (generalizability), making it difficult to apply findings to broader contexts and thus weakening their contribution to universal theory development. Finally, the evidence provided by descriptive research paradigms for policy evaluation is often indirect and ambiguous, failing to offer precise, reliable quantitative support for decision-makers in key areas such as resource allocation and policy optimization [6].

In response to these research gaps, this paper aims to argue for and advocate a strategic shift in sustainable tourism research from the traditional case-narrative paradigm to a modern causal inference paradigm. We contend that introducing and applying causal inference methods such as Difference-in-Differences (DID), Instrumental Variables (IV), Propensity Score Matching (PSM), and Regression Discontinuity Design (RDD) is an essential path to enhancing the scientific rigor, theoretical depth, and practical value of sustainable tourism research [7]. Through sophisticated research designs, these methods can simulate the logic of randomized experiments using observational data, thereby more reliably identifying the net effects of policy interventions or specific factors.

This study's goal is not to completely negate the value of case narratives but to explore how to organically integrate them with causal inference methods, building an integrated research framework that is both deep and credible. This paper will first review and critique the current methodological status of sustainable tourism research, which

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is dominated by case narratives. It will then systematically introduce the ideas, application conditions, and potential of several mainstream causal inference methods in tourism research. Finally, by constructing an integrated framework and proposing specific recommendations, it will promote a paradigm shift in sustainable tourism research. The contribution of this paper is not only a methodological reflection and forward-looking discussion but also an attempt to provide researchers in the field with a set of operational analytical tools aimed at bridging the gap between "description" and "explanation," and between "narrative" and "attribution," ultimately serving a more scientific and effective sustainable tourism practice.

The remainder of this paper is structured as follows: Section 2 reviews and critiques the methodological literature in sustainable tourism research. Section 3 elaborates on the contributions and limitations of the case-narrative paradigm. Section 4 focuses on the core logic and application of causal inference methods. Section 5 discusses the proposed integrated research framework and provides recommendations. Section 6 concludes the paper.

II. LITERATURE REVIEW: A METHODOLOGICAL REFLECTION ON SUSTAINABLE TOURISM RESEARCH

The evolution and debate over methodology have always been a core driving force in the development of sustainable tourism research as an interdisciplinary field. This section aims to review and comment on the mainstream trends, core debates, and future directions in research methods within this field, providing a theoretical basis and background for the paradigm shift proposed in this paper.

A. Case Narratives: Contributions and Limitations of Descriptive Research

Since the concept of sustainable tourism emerged, the case study has been the primary research method in the field [3]. Scholars have produced a vast amount of rich, descriptive knowledge through in-depth analyses of specific tourist destinations, communities, or projects. These studies typically employ qualitative methods such as in-depth interviews, participant observation, and fieldwork to present the complexity, dynamism, and multidimensionality of sustainable tourism in specific contexts through narratives [4]. For example, a case study of an eco-lodge in Costa Rica can vividly depict how it interacts with the local community, designs environmental education programs, and what experiences tourists gain from it. This research paradigm is invaluable for understanding "what" and "how" questions, revealing the specific challenges, successful experiences, and subtle socio-cultural dynamics in sustainable tourism practices [8].

However, the academic community has engaged in profound critical reflection on this case-narrative-dominated research paradigm. Liu's (2003) classic critique is particularly representative, pointing out that the sustainable tourism research literature is "fragmented, ad hoc, and often based on questionable assumptions and arguments" [2]. These criticisms mainly focus on the following aspects:

- **Paucity of Theoretical Contribution:** A large number of descriptive case studies, while accumulating rich empirical material, often stop at describing phenomena and fail to effectively "climb the ladder of abstraction," that is, to distill generalizable concepts,

propositions, and theoretical frameworks from specific cases [9]. This situation has led the field of sustainable tourism to largely "borrow" theories from other disciplines (such as sociology, economics, and anthropology) rather than developing its own unique theoretical system rooted in its own phenomena [10].

- **Inability for Causal Explanation:** Case narratives are adept at describing the process of events but are weak in explaining "why" they occur, especially in identifying causal relationships. Due to the lack of rigorous control groups and control over confounding factors, case studies find it difficult to determine whether a certain outcome (such as community empowerment) is "caused" by a specific tourism intervention or driven by other concurrent socio-economic changes. This causal ambiguity greatly limits the reliability of research conclusions and their policy guidance significance [5].
- **Lack of External Validity:** The conclusions of studies based on single or a few cases are highly questionable in their ability to be generalized to other contexts (i.e., replicability and external validity). A community tourism model that is successful in a specific cultural and institutional context may completely fail in another region. This context-dependency of case studies makes it difficult to form universally applicable knowledge for large-scale policy promotion [11].

B. The "Critical Turn" in Methodology and the Call for Theory Development

In response to the limitations of descriptive research, a significant "Critical Turn" has emerged in the field of sustainable tourism research in recent years [12]. Scholars have begun to move beyond simple celebrations of "best practices" to focus more on power relations, social injustice, ideology, and the complex political and economic processes behind tourism development. While this turn has brought about a deepening of theoretical perspectives, many critical studies still rely on traditional qualitative case analysis in their research methods, failing to fundamentally solve the problem of causal inference.

At the same time, the call for strengthening theory building has become increasingly loud. A study by Stumpf et al. (2016) found that even in the application of the Grounded Theory Method, which is intended to generate theory, the output of tourism research mostly remains at the descriptive level, failing to achieve true theoretical breakthroughs [10]. This "theoretical deficit" not only affects the maturation of sustainable tourism as an independent discipline but also creates a "theory-practice gap." Practitioners expect clear and reliable guidance for action from research, but descriptive, contextualized research conclusions often fail to meet this need.

C. From "What" to "Why": The Rise of Causal Inference Methods

To bridge this gap, some scholars in tourism economics and policy research have begun to introduce causal inference methods from quasi-experimental and non-experimental designs [7]. Informed consent was obtained from all subjects involved in the study. The core idea of these methods is to simulate experimental conditions as closely as possible in the

real world where true randomized controlled trials (RCTs) are not feasible, in order to identify the causal effects between variables. For example, when evaluating the impact of a tourism promotion policy on the number of tourists, researchers can use the Difference-in-Differences (DID) method to isolate the true effect of the policy by comparing the difference in changes between the policy implementation area and the non-implementation area before and after the policy [13].

Currently, the application of causal inference methods in tourism research is still in its infancy but has shown great potential. These studies are no longer satisfied with merely describing the co-occurrence of "tourism development" and "increased resident income" but are committed to answering "To what extent did tourism development 'cause' the increase in resident income?" This cognitive leap from correlation to causation is key to improving research quality and practical value. However, the application of these methods in the broader and more complex field of sustainable tourism is still very limited, and their methodological value and potential are far from being fully recognized and exploited.

In summary, sustainable tourism research is at a methodological crossroads. On the one hand, the traditional case-narrative paradigm has made invaluable contributions in providing in-depth contextual understanding, but its limitations in theory building and causal explanation are increasingly becoming a bottleneck for the discipline's development. On the other hand, quantitative research methods represented by causal inference provide powerful tools to address these limitations, but their application is not yet widespread, and there is a risk of being disconnected from the qualitative research tradition. Therefore, promoting a paradigm shift from case narratives to causal inference and exploring their organic combination has become an urgent and important task for the field of sustainable tourism research.

III. THE CASE NARRATIVE RESEARCH PARADIGM: CONTRIBUTIONS AND INHERENT LIMITATIONS

Before delving into the paradigm shift, it is necessary to conduct a fair assessment of the case narrative paradigm, which is currently mainstream in sustainable tourism research. Understanding its contributions and inherent limitations is the logical starting point for promoting methodological innovation.

A. The Value and Contributions of Case Narratives

The case narrative research paradigm, especially its qualitative research tradition, has made indelible contributions to the construction of the sustainable tourism knowledge system. Its core value is mainly reflected in the following three aspects:

- **Contextual Depth and Holistic Understanding:** Case studies can delve into specific socio-cultural contexts and grasp the sustainable tourism phenomenon holistically through "Thick Description." It focuses not only on isolated variables but also on the interaction and intertwining of variables in the real world. This method enables researchers to capture those "soft" factors that are difficult to quantify, such as the trust structure of the community, local knowledge, the evolution of cultural identity, and the subtle operation of power relations, which are

precisely the keys to the success or failure of sustainable tourism [4].

- **Exploratory Research and the Germination of Theory:** In the early stages of a research field, when theories are not yet mature and phenomena are not yet clear, exploratory case studies are an effective way to discover new problems, propose new concepts, and construct preliminary hypotheses. The initial inspiration for many classic theories on tourism impacts, community participation, and destination governance came from in-depth insights into one or two typical cases. Case narratives provide the theoretical "raw materials" and directional guidance for subsequent larger-scale quantitative research [8].
- **A Bridge Connecting Practice and Policy:** Vivid and specific case stories are often more persuasive and communicable than abstract statistics. A successful sustainable tourism case can provide a model and inspiration for other regions to learn from. For policymakers and practitioners, case narratives provide an intuitive and easy-to-understand form of knowledge.

B. The Inherent Limitations of Case Narratives

Despite their significant contributions, the inherent limitations of the case narrative paradigm are increasingly becoming a bottleneck restricting the advancement of sustainable tourism research to a higher scientific level. These limitations are rooted in the essence of its methodology and are mainly manifested as:

- **Causal Ambiguity:** This is the core weakness of case narratives. It can well describe that "After X (a policy) occurred, Y (an outcome) also occurred," but it is difficult to prove that "Y was caused by X." In complex socio-economic systems, countless "hidden" confounding variables may simultaneously affect Y. For example, after a nature reserve is established in a region, the income of local residents increases. A case narrative might attribute this to the development of ecotourism, but it cannot rule out the combined effects of concurrent agricultural subsidy policies, infrastructure improvements, or macroeconomic upturns. This inability to establish a clear causal chain keeps the research conclusions at the level of "correlation" rather than "causation," greatly reducing their scientific certainty.
- **Selection Bias:** In case selection, researchers tend to choose "interesting" or "successful" cases for research, while those that have failed, are mediocre, or are controversial are less likely to enter the academic field of vision. This "publication bias" leads to a picture of sustainable tourism practice presented in the literature that may be far more optimistic and idealized than reality. However, the lessons learned from failed cases may be of equal or even greater value for theoretical development and practical guidance.
- **Limited External Validity:** The conclusions of case studies are deeply rooted in their unique historical, cultural, and institutional contexts. Therefore, directly replicating the successful experience of one case in another completely different context is highly risky.

For example, a community management model that relies on the authority of specific tribal elders may be completely ineffective in another community with a prevailing individualistic culture. This context-specificity of case narratives makes it difficult to form theoretical and policy recommendations with universal guiding significance.

- **Researcher Subjectivity:** The interpretation of qualitative data largely depends on the researcher's personal experience, theoretical literacy, and value position. From interview records to the final research report, the process of information screening, coding, interpretation, and presentation is full of subjective decisions. Although methods such as triangulation can be used to enhance the rigor of the research, its replicability and objectivity are still naturally different from standardized quantitative research.

IV. THE CAUSAL INFERENCE RESEARCH PARADIGM: CORE LOGIC AND APPLICATIONS

To overcome the inherent limitations of the case narrative paradigm, sustainable tourism research urgently needs to introduce a set of methodological tools that can more rigorously identify causal relationships. The causal inference paradigm, with its core of counterfactual analysis, provides a systematic solution for this.

A. Core Logic: The Counterfactual Framework

The core of causal inference is to answer a counterfactual question: "What would have been the outcome for an individual (e.g., a destination) that received an intervention (e.g., a tourism policy) if it had not received the intervention?" [7]. This "unobserved" outcome is the so-called "counterfactual." Obviously, in the real world, we cannot simultaneously observe the outcome of the same individual at the same point in time under both the intervention and non-intervention states. Therefore, the fundamental task of causal inference is to find an effective "control group" that can simulate this "counterfactual" to the greatest extent possible through sophisticated research design. An ideal control group should have the same trend of change in its outcome variable as the "treatment group" in the absence of the intervention. Various causal inference methods are essentially designed to construct or approximate such an ideal control group.

B. Main Methods and Their Application Potential in Tourism Research

The following introduces several mainstream causal inference methods that are widely used in the social sciences and have great potential in sustainable tourism research.

1) Difference-in-Differences (DID)

- **Logic:** The DID method isolates the causal effect of a policy by comparing the "difference" (the second difference) of the "changes" (the first difference) between the "treatment group" and the "control group" "before and after" the policy intervention. Its key assumption is the "Parallel Trend Assumption," that is, in the absence of the policy intervention, the outcome variables of the treatment group and the control group would have maintained the same development trend [13].

- **Application Potential:** DID is very suitable for evaluating various sustainable tourism policies with clear implementation time points and scopes of influence. For example:
- Evaluating the net effect of the "all-for-one tourism demonstration zone" policy on regional tourism economy and environmental quality.
- Analyzing the real impact of opening a high-speed rail line on the tourism revenue and employment of cities along the line.
- Examining the changes in non-agricultural income and happiness of local residents after a village is rated as a "China Beautiful Leisure Village."

C. Propensity Score Matching (PSM)

- **Logic:** When whether an individual receives an intervention is not random but based on their own characteristics (i.e., there is a "self-selection" problem), PSM provides a solution. It calculates the "propensity score" (probability) of each individual entering the treatment group based on a series of observable variables, and then for each individual in the treatment group, finds one or more individuals in the control group with very similar propensity scores for matching, thereby constructing a control group that is highly similar to the treatment group in pre-intervention characteristics [14].
- **Application Potential:** PSM is suitable for evaluating the effects of individuals (such as tourists, enterprises, communities) participating in a certain project or plan. For example:
- Evaluating whether hotels that have participated in ecotourism certification have differences in profitability and environmental investment compared to hotels that have not participated but have similar characteristics [15].
- Analyzing whether the income level and livelihood diversity of farmers who have participated in rural tourism cooperatives have improved compared to farmers who have not participated but have similar family backgrounds and land resources.

D. Instrumental Variables (IV)

- **Logic:** When there are unobservable confounding variables (such as personal ability, cultural preferences) that affect both the intervention and the outcome, DID and PSM may fail. The IV method solves this problem by introducing an "instrumental variable." An effective instrumental variable must meet two conditions: it is highly correlated with the intervention variable, but it does not directly affect the outcome variable except by affecting the intervention variable [16].
- **Application Potential:** The IV method can handle more complex endogeneity problems, although finding effective instrumental variables is extremely challenging. For example:
- When studying the impact of tourism development on local cultural change, since tourism development itself may be affected by the local cultural openness

(endogeneity), one can try to use "whether it was historically a treaty port" or "the distance to the main transportation line" as instrumental variables for the level of tourism development.

E. Regression Discontinuity Design (RDD)

- Logic: RDD utilizes a clear "cutoff" in a policy or rule. It compares the small difference in outcomes between individuals who just crossed the cutoff and received the intervention and individuals who just did not cross the cutoff, and attributes this difference to the causal effect of the policy. This is considered the quasi-experimental method that is "closest" to a randomized experiment.
- Application Potential: It is suitable for evaluating policies that are based on a threshold of a certain continuous variable for eligibility. For example:
- Evaluating the real effect of a tourism entrepreneurship loan provided to poor households with an annual income of less than 50,000 yuan on these families' poverty alleviation.
- Analyzing the impact of scenic spot ticket policies for the elderly (e.g., free for those aged 65 and over) on the frequency of travel and health status of the elderly.

The table below (Table I) summarizes several mainstream causal inference methods.

TABLE I. SUMMARY OF MAINSTREAM CAUSAL INFERENCE METHODS

Method	Core Logic	Applicable Scenarios	Key Assumption
Difference-in-Differences (DID)	Compares the difference in changes between the treatment and control groups before and after the intervention.	Evaluating macro or meso-level policies with a clear timeline and scope.	Parallel Trend Assumption.
Propensity Score Matching (PSM)	Matches individuals in the treatment group with those in the control group who have similar characteristics to address self-selection bias.	Evaluating the effects of individual participation in projects/programs.	Unconfoundedness (all variables affecting selection are observable).
Instrumental Variables (IV)	Introduces an exogenous variable (instrument) to address unobservable confounding factors.	Handling endogeneity issues such as reverse causality and omitted variables.	The instrument is correlated with the treatment but not directly with the outcome (exclusion restriction).
Regression Discontinuity Design (RDD)	Utilizes a cutoff point in a policy rule to create a local randomized experiment.	Evaluating policies based on a clear eligibility threshold.	Individuals are similar around the cutoff; no other policies apply at the same cutoff.

By applying these methods, sustainable tourism research can leap from the "first level" of describing phenomena to the "second level" of testing causal relationships, thereby providing a more solid and reliable scientific basis for theoretical development and policy formulation.

V. DISCUSSION: TOWARDS AN INTEGRATED RESEARCH FRAMEWORK

The core argument of this paper is not to completely negate the value of case narrative research, nor to advocate for its complete replacement with causal inference methods. On the contrary, we believe that the future of sustainable tourism research lies in constructing an integrated research framework that can organically combine the two. This framework can fully leverage the deep insights of case narratives and the scientific rigor of causal inference, thereby achieving a complementary advantage.

A. From Opposition to Complementarity: The Synergy of Two Paradigms

Case narratives and causal inference may seem contradictory in their research logic, but they actually have a natural complementary relationship. Case narratives are strong in "Hypothesis Generation," while causal inference is strong in "Hypothesis Testing." An ideal research path should be:

- Start with Case Narratives to Discover Problems and Mechanisms: In the early stages of research, through one or two in-depth case studies, researchers can identify key stakeholders, important influencing variables, potential causal chains, and noteworthy heterogeneous effects. For example, through interviews, it may be discovered that the key mechanism by which an ecological compensation policy increases resident satisfaction is not the money itself, but the "sense of procedural justice" in the policy implementation process.
- Leverage Causal Inference to Quantify Effects and Relationships: Based on the hypotheses proposed by the case study (e.g., "a sense of procedural justice is key to improving policy satisfaction"), researchers can design larger-scale quantitative studies. For example, using Propensity Score Matching (PSM) to compare the difference in resident satisfaction between communities that have implemented "high procedural justice" and "low procedural justice" models, thereby quantifying the causal effect of "procedural justice."
- Return to Case Narratives to Interpret Results and Context: After obtaining quantitative causal relationships, the research can return to the cases to explain "why" such a causal relationship exists. For example, if quantitative results show that the policy effect differs significantly in communities with different cultural backgrounds, a comparative analysis of cases can be used to delve into how cultural factors moderate the mechanism of the policy effect.

This "Qual → Quan → Qual" cycle constitutes a spiraling process of knowledge production. The figure below (Figure 1) visually demonstrates this integrated research framework. The table below (Table II) clearly shows the

division of roles and synergy between the two paradigms at different research stages.

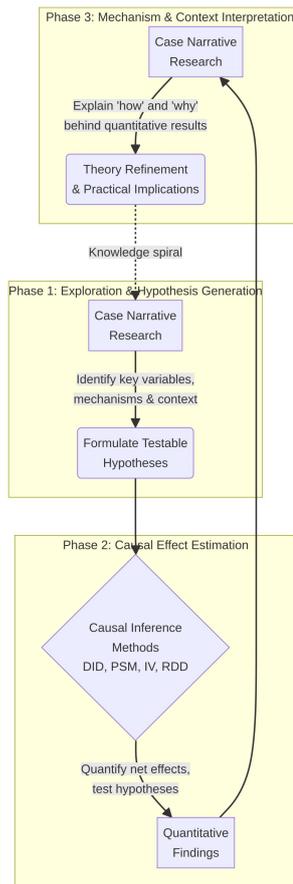


Fig. 1. An Integrated Research Framework for Case Narratives and Causal Inference

TABLE II. DIVISION OF ROLES FOR THE TWO RESEARCH PARADIGMS AT DIFFERENT RESEARCH STAGES

Research Stage	Primary Task	Role of Case Narrative Paradigm	Role of Causal Inference Paradigm
Exploration & Hypothesis Generation	Identify key variables, understand mechanisms, build hypotheses	Leading Role: Provide thick description, uncover potential causal chains	Supporting Role: Offer preliminary data patterns for reference
Causal Effect Estimation	Test hypotheses, quantify the net effect of interventions	Supporting Role: Help understand outliers and special findings	Leading Role: Apply methods like DID, PSM for rigorous causal attribution
Mechanism & Context Interpretation	Explain why and how causal relationships occur in specific contexts	Leading Role: Delve into the black box, explain underlying mechanisms	Supporting Role: Provide subgroup analysis to verify mechanism channels

B. Recommendations for Researchers and Journals

To promote this paradigm shift, researchers, journal editors, and reviewers need to work together to create an

academic ecosystem that encourages methodological innovation and integration. We propose the following recommendations:

For Researchers:

- **Embrace Methodological Pluralism:** Future sustainable tourism researchers should strive to become "bilingual," proficient not only in qualitative methods like interviews and fieldwork but also in the econometric tools required for causal inference. Overcoming methodological barriers is a prerequisite for research innovation.
- **Strengthen Research Design Awareness:** From the very beginning of a research project, there should be a clear "causal inference" awareness. Think about how to find or construct a suitable control group, pay attention to potential endogeneity and selection bias issues, and not just look for an "interesting" case.
- **Emphasize Data Accumulation:** High-quality causal inference depends on high-quality data, especially panel data that can track individual changes over the long term. Researchers should cooperate with government departments, tourism enterprises, and local communities to build micro-databases in the field of sustainable tourism.

For Journals and Reviewers:

- **Advocate for Methodological Rigor:** Journals should raise the requirements for the methodology section of research papers. For papers that make causal claims, authors should be required to clearly state their causal identification strategy and conduct robustness checks. For purely case studies, they should be encouraged to deeply discuss the limitations of the research and propose clear, operational hypotheses for future causal testing research.
- **Encourage Integrative Research:** Journals can create special issues or sections to encourage the publication of research that successfully integrates case narrative and causal inference methods. When reviewing such manuscripts, reviewers should conduct a comprehensive evaluation based on both the "trustworthiness" of qualitative research and the "validity" of quantitative research standards.
- **Be Tolerant of Exploratory Failures:** Finding effective causal identification strategies (especially instrumental variables) is extremely difficult. Journals and reviewers should be more tolerant of research that has made rigorous methodological attempts but whose results are not significant or have not completely solved the endogeneity problem, and value its contribution to methodological exploration.

VI. CONCLUSION

Through a systematic reflection on the methodology of sustainable tourism research, this paper has argued for the necessity and feasibility of a paradigm shift from the current descriptive paradigm dominated by case narratives to a causal inference paradigm centered on counterfactual analysis. We believe that this transformation is key to enhancing the scientific rigor, theoretical contribution, and policy value of sustainable tourism research.

Core Conclusions can be summarized as follows: First, the case narrative paradigm has irreplaceable value in providing contextualized in-depth understanding and exploratory hypotheses, but its inherent limitations in causal identification, theoretical generalization, and objectivity have become a bottleneck restricting the development of the discipline. Second, causal inference methods, represented by Difference-in-Differences and Propensity Score Matching, provide rigorous scientific tools for identifying the net effects of policies and projects under non-experimental conditions, which can effectively compensate for the shortcomings of case narratives. Third, the two paradigms are not mutually exclusive but should move towards integration. An integrated research framework that "begins with narrative, ends with explanation, and uses causal inference as a bridge" can maximize the advantages of both and promote the deepening of knowledge production.

Research Implications lie in the fact that this methodological discussion provides a clear "roadmap" for sustainable tourism researchers. It not only points out the "pain points" of the current research paradigm but also provides specific, operational solutions. For the practical field, this means that future research will be able to provide more reliable "evidence" for policymakers, telling them "what policies are truly effective under what conditions," thereby promoting the implementation of evidence-based policymaking in the field of sustainable tourism.

Limitations of the Study: This paper is mainly a conceptual discussion at the methodological level and does not provide an empirical case of applying the integrated framework. In addition, the causal inference methods introduced in this paper are not a panacea; they each have strict assumptions and face great challenges in data availability in practical applications.

Future Research should be dedicated to applying the integrated framework proposed in this paper to specific empirical studies. For example, one could choose a typical sustainable tourism policy (such as the return of national park entrance fees to the community), first gain an in-depth understanding of its implementation process and perceived effects in different communities through case studies, and propose hypotheses about the key mechanisms affecting the policy's effectiveness. Then, using large-scale panel data and DID or PSM methods, test the average causal effect of the policy on the community's economic, social, and environmental indicators. Finally, through comparative analysis, explain why the policy effects vary by region. Such research will be the best practice example for promoting the paradigm shift in sustainable tourism research.

In conclusion, the transition from case narratives to causal inference is not a "revolution" but a profound "evolution." It requires us to both cherish the wisdom of traditional qualitative research and bravely embrace the rigor of modern quantitative science, and in the tension and fusion of the two, jointly create a new era of sustainable tourism research.

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AUTHOR CONTRIBUTIONS

Lulu Jia: Conceptualization, Methodology, Writing – Original Draft, Writing – Review & Editing, Supervision. Lulu Jia led the conceptual development of the study, designed the methodology, and was primarily responsible for drafting and revising the manuscript.

Huiping Chen: Data Curation, Formal Analysis, Writing – Original Draft, Writing – Review & Editing. Huiping Chen contributed to the collection and analysis of relevant

literature, as well as drafting and editing sections of the manuscript.

Yuhui Jie: Investigation, Writing - Original Draft, Visualization. Yuhui Jie was involved in conducting literature review, providing critical insights, and creating visual representations for the paper.

COMPETING INTERESTS

The authors declare no competing interests.

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