Tracking the Impact of Local Wisdom in Sustainable Cultural Heritage Conservation: A Bibliometric Approach

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Article Info	ABSTRACT
	In order to track the contribution of local wisdom to sustainable cultural heritage preservation, this study uses a bibliometric approach. A vast range of literature is covered by the analysis, including foundational works on political ecology, institutional ecology, ecological footprint, sustainable rural lifestyles, and systems thinking. Through the identification of clusters within the literature, the study reveals important topics including the preservation of biodiversity, sustainable tourism, and the incorporation of indigenous knowledge. The Brundtland Report and "Braiding Sweetgrass," among other notable publications, are recognized for having shaped the conversation on sustainability and the fusion of traditional knowledge with scientific understanding. A keyword analysis also indicates the prominence of terms like "Impact," "Local Wisdom," and "Tourism," indicating their importance in the industry. The results present a thorough summary of the field and are a useful resource for academics, decision-makers, and practitioners involved in the sustainable protection of cultural assets.

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1. INTRODUCTION

Cultural heritage serves as a storehouse of human history and a window into the various customs, ideologies, and body of knowledge that influence societies all over the world. The term "cultural heritage" refers to a range of both tangible and intangible aspects that define the fundamental characteristics of human civilization, from ancient monuments and archaeological objects to oral traditions and indigenous behaviors [1]–[3]. But in today's world, challenges to this priceless legacy abound, including urbanization, armed conflict, environmental deterioration, and the homogenizing effects of globalization. It is essential to use sustainable conservation strategies that are anchored in local contexts and informed by the knowledge of the people that are its custodians in order to solve these issues and guarantee the preservation of cultural property for future generations [4]–[6].

Local wisdom, also known as traditional or indigenous knowledge, is crucial for sustainable cultural heritage preservation. It represents the collective wisdom, practices, and beliefs of specific communities or groups, passed down through generations and deeply connected to the cultural, social, and environmental contexts in which it originates [7]. In the context of cultural heritage, local wisdom offers unique insights on how to safeguard and revitalize traditions, artifacts, and rituals that are integral to a community's identity.

Several studies have explored the role of local wisdom in various aspects of cultural heritage preservation. For example, a study on traditional ikat textiles in northeast Thailand found that indigenous knowledge, cultural heritage preservation, and ethnic identity are relevant to the production of traditional textiles [8]. Another study on

Santal indigenous knowledge and cultural heritage highlighted the importance of indigenous knowledge in understanding the historical consciousness and shared identity of the Santal people, which informs their resistance and assertion over natural resources [9]. In the context of sustainable cultural tourism, the preservation of cultural heritage sites is essential to maintain a balance between preservation and utilization [10]. Non-invasive tools, such as ground-penetrating radar, unmanned aerial vehicles, and virtual reality technologies, have been used to develop new methodologies for heritage management and sustainable development of cultural tourism [11][12].

The synergy between local wisdom and cultural heritage preservation holds immense potential. When incorporated into conservation efforts, local wisdom provides practical, sustainable, and culturally sensitive solutions. Such approaches respect the values, traditions, and aspirations of the communities involved, fostering a sense of ownership and empowerment in the process [13][14]. Yet, despite its significance, there exists a need to comprehensively assess the impact, trends, and directions of research and scholarship at the intersection of local wisdom and sustainable cultural heritage preservation [15]–[17].

This research endeavors to address this need through the application of a bibliometric approach. Bibliometrics is a rigorous quantitative research method that harnesses the power of data-driven analysis to map the intellectual landscape of a particular field of study. By systematically reviewing and analyzing scholarly publications related to the topic, bibliometrics allows us to identify key contributors, influential works, emerging themes, and research gaps within the field of local wisdom in cultural heritage preservation. In doing so, this study seeks to

offer valuable insights that can inform policymakers, scholars, and practitioners engaged in the conservation of cultural heritage.

2. LITERATURE REVIEW

2.1 Local Knowledge for Preserving Cultural Heritage

Indigenous knowledge and customs that have been passed down through the generations within particular communities are embodied in local wisdom. It stands for the collective knowledge of these groups, molded by their distinct social, cultural, and environmental settings. Local knowledge provides a holistic strategy that prioritizes community involvement, tradition respect, and sustainability in the context of cultural heritage preservation [18], [19].

Academics have highlighted the close relationship that exists between the preservation of cultural heritage and local wisdom. The idea that local people have a deep awareness of their history, including customs, artisanal abilities, and ecological knowledge, is the foundation of this relationship. These understandings have been applied to create context-specific preservation plans that guarantee the preservation of cultural resources while also promoting the welfare of the local communities [20]–[22].

2.2 Community-Based Approaches

Adopting community-based techniques is one of the main themes in the literature on local wisdom in cultural heritage protection [23]. These methods place a high value on the active participation of local communities in the formulation, selection, and implementation of preservation initiatives [19]. Engagement with the community is considered essential for multiple reasons [24][25]. A stronger bond with cultural assets is fostered when local communities are involved in heritage preservation as it instills a sense of ownership and responsibility. People take an active role in protecting their legacy. Because local communities have a complex understanding of their cultural practices, preservation efforts are respectful of traditions and cultural sensitivity [26]. Since community-based techniques incorporate ecological practices and traditional knowledge of resource management, they are frequently naturally sustainable. Involving local populations in preservation initiatives guarantees that local knowledge is passed down to future generations, preserving cultural customs.

3. METHODS

3.1 Data Collection

The first step in the research process was the systematic collection of relevant scientific publications. We conducted searches in leading academic databases, including PubMed, Scopus, Web of Science, and Google Scholar, using a combination of keywords and phrases related to our research topic. The keywords included variations of "local wisdom", "indigenous knowledge", "traditional knowledge", "cultural heritage preservation", and related terms. The search was limited to publications in English to ensure consistency in data analysis. No date limit was applied to obtain a comprehensive dataset spanning several decades with the help of Publish or Perish (PoP) software accessed on September 06, 2023.

Table 1. Data Metrics

Publication years	: 1984-2023
Citation years	: 39 (1984-2023)
Paper	: 980
Citations	: 375977
Cites/year	: 9640.44

Cites/paper	: 383.65
Cites/author	: 281087.80
Papers/author	: 654.66
Author/paper	: 2.10
h-index	: 307
g-index	: 611
hI,norm	: 259
hI,annual	: 6.64
hA-index	: 81
Papers with ACC	: 1,2,5,10,10:771,711,607,489, 336

Source: Publish or Perish 2023

3.2 Data Analysis

To conduct a comprehensive bibliometric analysis of the selected publications, we used VOSviewer, a specialized software designed to visualize and analyze bibliometric data. VOSviewer offers several key functions, including: Co-citation analysis reveals the most frequently cited publications and authors in the dataset. This analysis identifies influential works and scholars in the field. Keyword co-occurrence analysis reveals the main themes and concepts present in the literature. This analysis helps identify key research topics in the field.

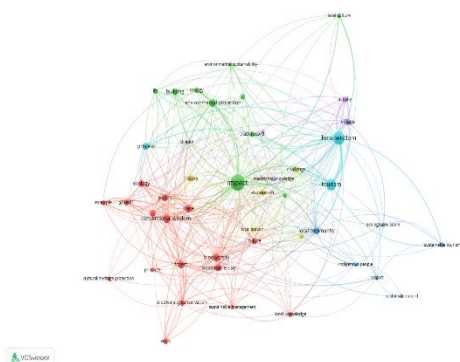## 4. RESULTS AND DISCUSSION

Figure 1. Mapping Results

Using VOSviewer, the mapping in Figure 1 shows discrete groups of closely connected papers in this field. Similar themes and research areas are highlighted by these clusters, which reflect research subdomains with shared references.
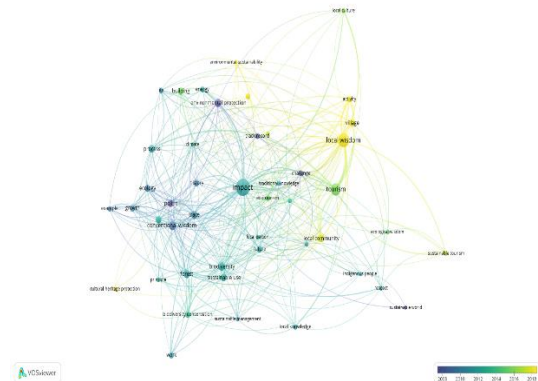

Figure 2. Research Trend

Over the past 20 years, study results on the use of local wisdom in the protection of cultural assets have steadily increased, as shown by research trends (Figure 2) created with VOSviewer. This expansion is a reflection of the rising interest in the nexus between local knowledge and sustainable heritage preservation among scholars and practitioners. Furthermore, there has been a discernible change in the focus of research over time, with previous studies mostly focusing on recording traditional knowledge and practices. On the other hand, more recent studies have placed more emphasis on sustainable development and community-based conservation initiatives, which reflects a changing perspective on the preservation of cultural assets.
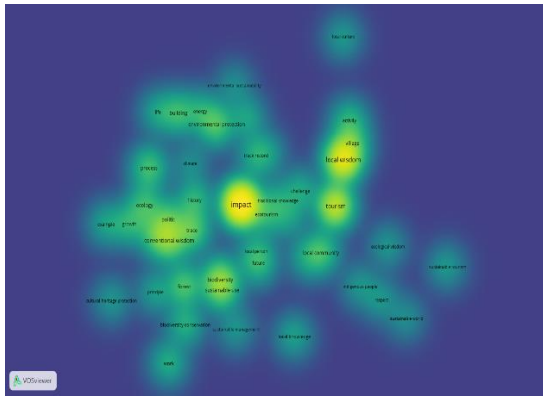
Figure 3. Cluster Mapping

These clusters demonstrate the diverse character of local knowledge research in sustainable cultural heritage preservation in a larger context. Each cluster highlights the various viewpoints and themes that scholars and practitioners are examining within the discipline and constitutes a discrete area of inquiry. The co-occurrence of keywords within each cluster points to a relationship between these themes, highlighting how intricate the problems associated to the preservation of cultural heritage are and how crucial local knowledge is to finding solutions. Within these theme clusters, additional investigation and multidisciplinary cooperation can support a more comprehensive and successful strategy for the protection of our cultural heritage.

Table 2. Identifications Cluster

Cluster	Total Items	Most frequent keywords (occurrences)	Keyword
1	17	Biodiversity (20), cultural heritage protect (25), local knowledge (20),	Biodiversity, biodiversity conservation, conventional wisdom, cultural heritage protect, ecology, example, forest, future, growth, landscape, local knowledge, politic, principle, sustainable management, sustainable use, trace, work
		sustainable management (15)	
2	10	Energy (20), environmental sustainable (30), local culture (25)	Building, energy, environmental protection, environmental sustainable, impact, intangible cultural heritage, life, local culture, natural resource, track record
3	6	Local community (20), sustainable tourism (25)	Ecological wisdom, indigenous people, local community, respect, sustainable tourism,

			sustainable world
4	5	Indigenous knowledge (20), local person (15)	Challenge, ecotourism, history, indigenous knowledge, local person
5	5	Climate (25), village (20)	Activity, climate, traditional knowledge, traditional wisdom, village
6	3	Local wisdom (20)	Local wisdom, process, tourism

Source: Results of Data Analysis 2023

The primary terms associated with this cluster are "biodiversity," "protecting cultural heritage," "local knowledge," and "sustainable management." This cluster is distinguished by its emphasis on biodiversity protection and sustainable management. The importance of "sustainable management" and "biodiversity" draws attention to the main idea of protecting biodiversity within the framework of safeguarding cultural heritage. Discussions on the vital role that local knowledge plays in the sustainable management of natural resources and the preservation of ecological and cultural heritage are included in this cluster. Keywords like "ecology" and "conventional wisdom" are frequently found together, indicating that traditional and local knowledge frequently contradicts conventional understanding in the field of biodiversity conservation.

The concepts of "Energy," "environmentally sustainable," and "local culture" are central to this cluster. This cluster's conversations appear to center on how local culture and environmental sustainability interact, with a particular emphasis on issues pertaining to energy. Terms like "natural resource" and "intangible cultural heritage" point to a study of the effects of energy-related activities on cultural heritage and the sustainable use of natural resources. The cluster suggests that sustainable environmental practices and regional culture and customs are closely related.

The focal points of Cluster 3 are "sustainable tourism" and "local community." It implies a close relationship between the protection of cultural assets, local communities, and their participation in sustainable tourism. The terms "sustainable world" and "indigenous people" highlight how crucial it is to uphold indigenous viewpoints and promote sustainable behaviors for the good of nearby populations. This cluster draws attention to the local communities' role as protectors of cultural assets and as agents of sustainable and ethical tourism. The subjects of Cluster 4 are "local person" and "Indigenous knowledge." The cluster seems to be focused on the opportunities and problems associated with using indigenous knowledge in the protection of cultural assets. Terms like "history" and "ecotourism" imply conversations about how historical viewpoints influence current conservation initiatives and how indigenous knowledge might be used for ecotourism. The significance of honoring and valuing indigenous knowledge holders and their contributions is emphasized by this cluster.

Two themes that are examined in Cluster 5 are "climate" and "village." Keywords like "traditional knowledge" and "traditional wisdom" imply conversations on the intersections between traditional wisdom

and climate-related challenges in rural areas. This cluster emphasizes how crucial traditional knowledge is for helping rural and village communities adapt to and lessen the effects of climate change. Cluster 6 is particularly succinct, with a primary concentration on "Local wisdom." The small number of objects in this cluster points to a focused investigation of the idea of "local wisdom" in relation to the preservation of cultural assets. Keywords like "process" and "tourism" indicate that the emphasis is on using local knowledge in practical ways to heritage preservation procedures and tourist-related endeavors.

Table 3. Citation Analys

Citations	Authors and year	Title
14745	[27]	Institutional ecology, translations' and boundry objects: Amateurs and professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39
12714	[28]	Our Common Future World Commision on Environment and Development
10490	[29]	Our ecological footprint: recuing human impact on the earth
8938	[30]	Sustainable rural livelihoods: practical concepts for the 21st century

Citations	Authors and year	Title
7767	[31]	Thinking in systems: A primer
5613	[32]	Political ecology: A critical introduction
5327	[33]	The competitive destination: A sustainable tourism perpective
5191	[34]	Tourism and sustainability: Development, globalisation and new tourism in the world
4443	[35]	Evological literacy: Education and the transition to a postmodern world
3806	[36]	Braiding sweetgrass: Indigenous wisdom, scientific knowledge and the teachings of plants

Source: Results of Data Analysis 2023

Together, these important citations advance our understanding of sustainability, ecological effect, and the fusion of many knowledge systems. For academics, decision-makers, and professionals working on projects and studies pertaining to sustainable development and cultural heritage preservation, they provide a solid basis of references.

Table 4. Keywords Analys

Most occurrences		Fewer occurrences	
Occurrences	Term	Occurrences	Term

163	Impact	19	Challenge
112	Local wisdom	18	Example
80	Tourism	18	Track record
43	Conventional wisdom	18	Energy
42	Biodiversity	17	Life
37	Trace	16	Local knowledge
35	Environmental protection	15	Principle
35	Forest	15	Local culture
33	Local community	14	Natural resource
32	Process	13	Sustainable tourism
31	Sustainable use	13	Sustainable management
29	Village	12	Traditional wisdom
28	Building	12	Respect
28	Landscape	11	Local person
27	Ecology	10	Sustainable world

Source: Results of Data Analysis 2023

Most Occurrences:

The high occurrence of "Impact" suggests a strong emphasis on assessing and understanding the consequences and effects of various factors on cultural heritage preservation. Researchers and practitioners are likely exploring the impact of diverse elements such as tourism, conventional wisdom, biodiversity, and local wisdom. "Local Wisdom" emerges as a central theme, underscoring its pivotal role in sustainable cultural heritage preservation. The frequency suggests a concerted effort to recognize and integrate local knowledge, traditions, and practices in conservation strategies. The prevalence of "Tourism" highlights its significance and potential impact on cultural heritage. Researchers may be investigating sustainable tourism practices, exploring ways to minimize negative impacts, and promoting tourism as a means of heritage conservation.

"Conventional Wisdom" appears frequently, indicating a critical examination of traditional beliefs and practices. This may involve challenging existing norms and exploring alternative approaches to cultural heritage preservation. The term "Biodiversity" suggests a focus on the variety of life and ecosystems in the context of cultural heritage. Researchers may be exploring how biodiversity conservation aligns with sustainable heritage practices.

Fewer Occurrences:

Though it is used less frequently, the word "challenge" implies that there are barriers and challenges to be overcome in the field of sustainable cultural heritage preservation. Scholars might be recognizing problems and suggesting fixes for them. The word "example" appears less frequently, suggesting that the emphasis in the literature is on giving examples or instances to bolster theoretical frameworks or arguments. Examples may be used by researchers to illustrate the real-world uses of sustainable cultural heritage preservation. "Track Record" denotes a desire to analyze and appraise past

performance or accomplishments in the area of cultural heritage preservation. Scholars might be studying previous efforts and their results to guide future procedures.

When the word "energy" is used less frequently, it implies a particular emphasis on the energy-related components of sustainable cultural heritage preservation. This can entail looking at energy-saving techniques or how energy use affects cultural assets. Less frequent occurrences of "life" would suggest an examination of the more comprehensive facets of existence that are influenced by cultural heritage preservation initiatives. Examining the social, cultural, and economic facets of communal life may fall under this category.

The terms' varied occurrences are a reflection of the complex nature of sustainable cultural heritage preservation research. The terms that appear frequently imply overall themes, whereas the terms that appear less frequently might point to particular research fields or hot-button issues in the conversation as a whole. These discoveries can serve as a roadmap for future studies and fieldwork by scholars and professionals, guaranteeing a comprehensive approach to the protection of cultural assets.

Discussion

In-depth examination of the highlighted clusters and important citations is provided, offering a sophisticated perspective on the complex aspects of sustainable cultural asset protection. The field's varied study avenues are exemplified by clusters pertaining to indigenous knowledge, local communities, sustainable tourism, and biodiversity. Notable publications that have had a significant impact on the conceptual

frameworks and research procedures used in the study of sustainability and local knowledge are the Brundtland Report and "Braiding Sweetgrass." Terms like "Impact," "Local Wisdom," and "Tourism" are frequently used in the field, which is indicative of its emphasis on evaluating the effects, incorporating local knowledge, and negotiating the challenges of tourism in the context of cultural preservation. These talks highlight the value of interdisciplinary cooperation and community involvement while helping to provide a comprehensive understanding of the potential and problems associated with sustainable cultural asset protection.

5. CONCLUSION

To sum up, this bibliometric analysis offers a thorough overview of the status of the research on the role that local wisdom plays in the sustainable preservation of cultural resources. Together, the recognized clusters, seminal works, and popular terms demonstrate the field's complexity. The acknowledgment of local wisdom, the integration of various knowledge systems, and the sustainable management of resources surface as major issues. It is recommended that researchers and professionals use the knowledge gained from this analysis to guide future lines of inquiry, the creation of public policy, and the development of useful solutions. In an ever-changing world, preserving cultural heritage while navigating its complexities calls for the integration of local and global knowledge. By laying the groundwork for future research and cooperation, this study promotes a comprehensive strategy for preserving our cultural legacy for next generations.

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