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Indigenous Knowledge: A Bibliometric Analysis of Studies done at the National and Global Level

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Abstract: Review of literature is an indispensable part of any kind of research. It helps the researcher to know the works done in a particular theme and the persons, institutions and publishers connected with that theme. It also helps in identifying future courses of research. The objective of the current study is the bibliometric analysis of studies on "Indigenous Knowledge" in India and world. Data from lens. organisation platform was used for the bibliometric analysis to prepare the present paper. The bibliometric analysis of studies on indigenous knowledge in India unfolds the following facts. Journal of Human Ecology has published the highest number (3) of publications. The author having the highest publication is Gopal Singh. The highest publications (6) are from University of Delhi and second highest (4) from Council of Scientific and Industrial Research and third highest (3) from Banaras Hindu University. A total number of 53 Journal Article and 17 Book Chapters have been published on Indigenous Knowledge. The bibliometric analysis of studies on indigenous knowledge in world unfolds the following facts. Indilinga: African Journal of Indigenous Knowledge Systems has published the highest number (127) of publications, second highest publications are by Indian Journal of Traditional Knowledge (25) and The Cultural Dimension of Development is the journal having third highest (22) publications. The author having the highest (21) publications is C. Thamban, second highest (17) papers by Patrick Ngulube and the third highest (17) publications is by Paul Sillitoe. A total number of 3022 Journal Article and 1084 Book Chapters 372 dissertations, 100 Article's in Conference Proceedings have been published. The top three countries having highest number of publications are South Africa (362), United States (303), Canada (213). The top three universities having highest number of publications are University of South Africa (69), University of KwaZulu-Natal (59), University of

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British Columbia (26). The present paper on bibliometric analysis on Indigenous Knowledge is very useful for all the researchers who wants to make systematic, and smart literature review.

Keywords: Indigenous Knowledge, Bibliometric analysis, Institutions, Publications

Introduction

Indigenous knowledge (IK) includes the expressions, practices, beliefs, understandings, insights, and experiences of Indigenous groups, generated over centuries of profound interaction with a particular territory. Its iterations and mechanisms are unique to each community, even where it shares certain features across groups by virtue of being embedded in a wider, common culture (Grey, 2014). It is a living system that is transmitted by oral tradition, rituals, and practical exercises. Traditional medicine and healthcare include Ayurveda, a 5,000-year-old system of medicine, offering holistic treatments based on herbal remedies and lifestyle modifications. Traditional storytelling, songs, and dances serve as channels for transmitting traditional knowledge and cultural values from elders to younger generations. Indigenous knowledge is holistic, collaborative, culturally and geographically specific, flexible, and places a strong emphasis on sustainability. Indigenous knowledge is becoming more widely acknowledged in a variety of domains, such as science, public policy, and conservation. In order to handle issues like fire management, marine conservation, forest management, water management, soil conservation, renewable energy, health and wellness, education, and cultural preservation, it provides insightful analysis and practical solutions. Aboriginal groups in Australia manage wildfires with controlled burns encouraged regeneration of native plants, did not cause any stress in koalas (Down to Earth, 2023), and in Fiji, fishing is prohibited during spawning seasons due to customary taboos, which provides sustainable seafood supplies. The Kayapo people of the Amazon jungle keep an eye on animal populations and illicit logging activity using an intricate network of paths and markers.

Utilizing subterranean tunnels for water management, terraced agricultural methods for soil conservation, and solar and wind power for sustainable energy are all examples of resource management. Indigenous communities provide complementary therapies for a range of illnesses because they have a deep understanding of medicinal plants and their applications. Diverse crops and farming methods created by indigenous populations around the world guarantee food security. Through mainstream education, language revitalization, and intergenerational knowledge transfer, indigenous knowledge is also utilized in education and cultural preservation.

India is a treasure trove of indigenous knowledge, with practices passed down through generations across its diverse landscapes and communities. From the snow-capped Himalayas to the tropical rainforests, these time-tested traditions offer a wealth of wisdom in various aspects of life. Environmental conservation involves traditional water harvesting systems like'surangs' and 'kuls' used by Himalayan communities to channel glacial meltwater for irrigation. The Warli tribe in Maharashtra protects sacred groves, preserving biodiversity and ecological balance. Agriculture and food security involve terrace farming, a sophisticated system that prevents soil erosion and maximizes crop yield on steep slopes. Tribal communities across India utilize diverse crop varieties and natural pest control methods, promoting resilience and food security in the face of changing environmental conditions.

Modern integration and recognition of indigenous knowledge are essential for India's continued growth and positive impact on the world. Recognizing the importance of ethical partnerships, respecting intellectual property rights, and ensuring community-driven initiatives are crucial for the continued growth and positive impact of India's indigenous knowledge. Indigenous knowledge has significant potential for development, but it faces several challenges. These include recognition and respect, which involves formal validation of indigenous knowledge practices, protecting intellectual property rights, and integrating indigenous knowledge into relevant policies. Knowledge preservation and transmission involve systematic documentation and archiving, intergenerational transmission, and language revitalization. Capacity building and collaboration involve education and training, collaborative research, and community-driven initiatives. Ethical considerations include informed consent, respecting biocultural diversity, and addressing power imbalances. These development needs can unlock the potential of indigenous knowledge for sustainable development, environmental conservation, and cultural resilience. By ensuring informed consent and fair benefit-sharing in research and development activities, we can unlock the immense potential of indigenous knowledge for sustainable development, environmental conservation, and cultural resilience. It's a collaborative journey that requires respect, recognition, and genuine partnership with indigenous communities to build a future where their knowledge flourishes.

Review of Literature

Rao (2006) discussed Indigenous Knowledge (IK), a local and tacit knowledge unique to a culture or society, and its impact on social development. It highlights

the need for sustaining IK and identifies reasons why current Intellectual Property Systems (IPSs) struggle to protect it. The paper highlights international and Indian initiatives for IK protection, such as amendments to Indian patent law, legislation for Biological Diversity, and Geographical Indication of Goods (Registration and Protection) Act. It suggests measures to extend protection, such as documentation of IK, registration and innovation patent systems, and the development of a sui generis system.

Sivasankari et.al., (2014) provided ethnopharmacological information on medicinal plants in the Thoppampatti village, Dindigul district, Tamilnadu, India, emphasizing the urgency of recording such data to conserve traditional medicinal plants. It is the first ethnobotanical study to record the traditional important medicinal plants of Thoppampatti village, with the aim of collecting, analyzing, and evaluating the ethnopharmacologic knowledge to protect it. The field study involved open and semi-structured interviews with 48 knowledgeable local people and traditional healers, yielding information on 139 plant species belonging to 54 families, used to treat 142 diseases and ailments categorized into 18 major categories. The study determined that leaves were the most frequently used plant parts, with decoction and juice being the most common methods of preparation for treating various diseases. The identified medicinal plants include 11 least concerned species, 3 vulnerable species, and one endangered species, highlighting the importance of sustainable utilization to prevent extinction due to deforestation and overexploitation. Medicinal plants play a crucial role in the health care of Thoppampatti village inhabitants, and those with high relative importance values may offer useful leads for further pharmacological investigations. The study recommends sustainable utilization of medicinal plants in the area.

Dhyani et al., (2010), also created a database on ethnobotanical aspects, sustainable utilization, value addition, and awareness generation related to Hippophaesalicifolia D. Don. in the higher Himalayan zone of Uttarakhand, India. A survey was conducted from June 2004 to July 2006, involving 480 interviews and semi-structured questionnaires in 24 Hippophae growing locations in 12 different valleys. The plant has multipurpose properties, traditionally used for food, medicine, veterinary care, fuel, fencing, agricultural tools, and dye mordant. Awareness programs and value-added products have led to economic upliftment for local inhabitants. The findings will impact modern scientific societies in conservation, cultivation, and popularization of this underutilized wild edible species, and have implications for the upcoming organic food and nutraceutical industries in the country.

Gupta (2006) stated in his article "From Sink to Source: The Honeybee Network Documents Indigenous Knowledge and Innovations in India" the work of the Honeybee Network in documenting and preserving traditional knowledge and grassroots innovations in India. Established in 1988-89, the network serves as a database those documents, sustains, and rewards grassroots innovators, with a focus on respecting and acknowledging the value of their inventions. The network has documented over 50,000 innovations and traditional knowledge practices, some of which have resulted in patents and received global attention. The paper also discusses the challenges in protecting traditional knowledge, addressing issues of bio-piracy and the economic significance of Indian biodiversity. The paper also highlights the importance of preserving traditional knowledge and grassroots innovations, protecting the intellectual property of local innovators, and fostering collaboration between local communities, scientists, and policymakers.

Shil (2014) studied the traditional remedies used by the Reang people in Tripura state, India, for various ailments. It was conducted through systematic field surveys from 2003 to 2004 to gather information on medicinal herbs used by them. The data was analyzed using informant consensus factor (FIC) and fidelity level (FL) to determine the homogeneity of informant's knowledge on medicinal plants and the uniqueness of a species to treat a particular ailment. The study presented 125 medicinal plant species, belonging to 116 genera and 59 families, used for treating 42 different ailments. Most of the remedies were taken orally, with leaves being the most common part. The consensus analysis revealed that fever and gastro-intestinal diseases had the highest FIC of 0.79, followed by dermatological problems. General health problems, inflammation, and pain had similar FIC levels. The study also highlighted some important plant species in terms of Fidelity level. Greater parts of the plant species achieved the highest fidelity level, while only 4% acquired lower FL. The species with high citation and informant concurrence value are reasonably significant. Cyathea, a rare tree fern used for major cuts or wounds, is considered a significant species. In conclusion, the traditional pharmacopoeia of the Reang ethnic group incorporates diverse flora available locally and is threatened by acculturation and deforestation. Documenting medicinal plants and indigenous knowledge can help develop management plans for conservation and sustainable use of these plants. The findings can also serve as an ethnopharmacological basis for selecting plants for future phytochemical and pharmaceutical studies.

Wheeler, et. al., (2020) explored the role of Indigenous knowledge (IK) in environmental monitoring, research, and decision-making, aiming to attract new participants to this field. The Delphi technique was used with 18 expert

participants, who were IK holders or working closely with IK from across the Arctic. The research aimed to examine the drivers and limitations of using IK alongside science to inform decision-making related to wildlife, reindeer herding, and the environment. The participants focused on transformative change related to institutional structure, politics, rights, involvement, power, and agency over technical issues. They identified two modes of desirable research: coproducing knowledge with scientists and autonomous Indigenous-led research. They highlighted the need for more collaborative projects and funding to support autonomous, Indigenous-led research. Misconceptions held by scientists concerning IK were related to the spatial, temporal, and conceptual scope of IK and the perceived need to validate it using Western science. The research highlights issues that need to be addressed by all participants in research and decision-making involving IK and science.

Ghosh et. al., (2015) explored the nutritional value of over 130 indigenous foods from the Oraon tribal community in Jharkhand, India. Focus group discussions and taxonomic classification were conducted, revealing many as rich sources of micronutrients like calcium, iron, vitamin A, and folic acid. Some foods also had medicinal properties. The study suggests that incorporating these foods into routine diets can help address malnutrition in tribal communities.

Kakati andDoulo (2002) studied the traditional therapeutic use of animals and animal parts in treating common human ailments among the Chakhesang tribe in Phek district, Nagaland. It details the traditional use of twenty-three animal species, some of which are rare or endangered. The authors suggest establishing human-nature interaction for sustainable utilization of animal resources through traditional farming systems and domestication of wild species.

Smith et.al., (2017) studied Indigenous and local knowledge play a crucial role in decision-making about biodiversity and its management. A novel method for gathering evidence involves a peer-to-peer validation process among farmers, similar to scientific peer review. The case study approach focused on pollinator decline in India, where there are no validated scientific studies on historical pollinator abundance. Local knowledge can contribute significantly and may be the principal component of the available knowledge base. The aim was to collate and validate local knowledge for integration with scientific knowledge from other regions to develop conservation strategies for pollinators. Farmers reported declining vegetable crop yields in Orissa, and the abundance of important insect crop pollinators, particularly Apis cerana, Amegilla sp., and Xylocopa sp., in the last 10-25 years. Key pollinators for commonly grown crops were identified, with Apis cerana and Xylocopa sp. being highly ranked as pollinators. Crop yield declines were attributed

to soil quality, water management, pests, climate change, overuse of chemical inputs, and lack of agronomic expertise. Pollinator declines were attributed to the quantity and number of pesticides used. Farmers suggested fewer pesticides, more natural habitat, and the introduction of hives to support pollinator populations.

Kingston et. al., (2009) studied on plant species Between 2003-2004, used in treating skin diseases among indigenous communities in Kanyakumari district of Tamil Nadu revealed that 30 plant species, from 29 genera and 22 families, are used for 11 different skin diseases. Nine plant species are used for all skin diseases, while four are exclusively used for leprosy. The Saracaasoca plant is particularly vulnerable due to its frequent use for scabies treatment.

Estrada et. al., (2022) stated that Primates, a diverse group of 521 species, are found in 91 countries, primarily in the Neotropic, Afrotropic, and Indo-Malayan regions. They play a crucial role in maintaining ecosystems and are threatened by global pressures to convert their habitats for agriculture and resource extraction. A study assessing the importance of Indigenous Peoples' lands in safeguarding primate biodiversity found that these lands account for 30% of the primate range and host 71% of primate species. As their range increases, these species are less likely to be threatened or have declining populations. Protecting Indigenous Peoples' lands, languages, and cultures is the best chance to prevent the extinction of the world's primates.

Priyadarshini (2019) studied anthropogenic changes in the planetary bio-physical systems contribute to climate change and environmental degradation. Indigenous knowledge from communities in harmony with nature can help develop national conservation strategies and research for climate change mitigation. India, with an 8.6% tribal population, has access to vast indigenous knowledge that can provide sustainable solutions to issues like declining agricultural productivity, soil quality, biodiversity loss, water scarcity, pollution, and other social challenges. This study aims to connect traditional practices of Indian tribes with specific Sustainable Development Goals (SDG), targets, and national indicators. An analysis of available datasets revealed that establishing functional links between traditional practices and SDG 2, 6, and 15 would significantly aid India's climate action policy. Improving income, women and child health, and education in these communities through dedicated interventions would directly positively affect national indicators of SDG 1, 2, 3, and 4. Effective policy interventions towards tribal welfare could significantly reduce the long-term effects of climate change.

Evangelista et.al., (2018) aimed to understand the distribution of 38 wildlife species in Somaliland, a region with limited data, to aid in conservation efforts. The

researchers used indigenous local knowledge to inform species distribution models (SDMs) to predict the presence of these species. They conducted 195 interviews with agro-pastoral men and women in 2016 and 2017, based on environmental range analysis. They tested two commonly used SDMs, Maxent and boosted regression trees (BRTs), to map the potential distribution of wildlife using interview data. The study presents case studies of two high conservation priority species: cheetah and African wild ass. Over half of the respondents reported the presence of 25 wildlife species in the survey. The least reported species in Somaliland in recent decades were lion, African wild ass, and Somali wild dog. Surprisingly, 177 respondents reported the presence of cheetah, which was presumed to be extirpated. The study suggests that cheetahs may persist throughout Somaliland, while African wild ass may have been extirpated. The models provide habitat suitability maps to guide future targeted surveys, demonstrating the importance of integrating indigenous local knowledge with SDMs for wildlife conservation in data-poor regions.

Kurnio et.al., (2021) focused on vulnerability and resilience in earthquake risk management has shifted from a purely technological approach to incorporating indigenous, traditional knowledge, community-based action, and local practices. Research has shown that indigenous knowledge plays a crucial role in avoiding unwanted impacts from hazards. In Indonesia, indigenous response to natural hazards involves adapting house constructions to their surrounding environment hazards. However, learning from indigenous knowledge requires translating it into new actions. This paper emphasizes the connection between knowing and acting on disasters, as manifested in house construction, and how this resonates with the concept of resilience.

Das et. al.(2021) studied the well-being of human society relies on the consistent flow of Ecosystem Services (ESs) and sustainable management of ecological resources. This can be achieved through various approaches, including the integration of indigenous ecological knowledge (IEK) in management prescription. The study focuses on understanding the relationship between ESs and IEK for sustainable environmental management in a tribal-dominated socio-ecological patch in the Barind Region of Malda district, Eastern India. Data was collected from randomly selected tribal households using a pre-tested questionnaire. The data was analyzed using a social preference approach and statistical tests. A general linear model (GLM) was used to examine the impact of socio-demographic attributes on the perceived valuation of ESs. Results showed that provisioning ESs were most preferred, followed by cultural and regulating ESs. Differential importance of ESs was observed among tribal communities, accounted for by gender, education, and

age. A gap between actual accessibility and evaluation of ESs was also apparent. Socio-demographic attributes significantly impact the valuation of ESs and are governed by IEK. Various indigenous ecological belief systems were closely linked to ecosystem conservation and sustainable supply of ESs. This study contributes to understanding the socio-ecological nexus in tribal-dominated ecological landscapes for improved ecosystem and environmental management.

Ghosh et.al., (2020) explored the traditional ecological knowledge of the SauriaPaharias, a vulnerable tribal group in Jharkhand, India, regarding indigenous foods (IFs). The study involved a cross-sectional mixed methods study in 18 villages, identifying a free list of all IFs known to the community, enumerating commonly consumed and little or historically used IFs, and analyzing their nutritive values. The community was aware of a large number of IFs, but only 50% were routinely consumed. About 47.6% of IFs were identified using taxonomic classification, with 87 IFs classified based on their common names in secondary literature. Nutritive values were documented for 84 IFs, with 55 foods found to have nutritive values in existing literature and 29 foods analyzed in laboratories. Many IFs were rich in micronutrients like calcium, iron, zinc, folic acid, vitamin A, and vitamin C. Common reasons for non-consumption of specific IFs included taste, availability, access seasonality, opportunity cost of access, and processing time. Promoting adequate intake of commonly accessed nutrient-rich IFs and revival of little used IFs while addressing non-consumption and mainstreaming them into daily diets could be an effective strategy to increase micronutrient intake. Policies focusing on incorporating nutrient-rich IFs into dietary diversification strategies and ongoing supplementary feeding programs can help address malnutrition in the community.

Dasgupta et.al., (2023) discussed the potential of sustainable management of shifting cultivation, also known as Jhum, in the context of tropical deforestation. The study, conducted in the Zunheboto district of Nagaland, India, used a mixed research method to explore Indigenous and Local Knowledge and Practices (ILKPs) associated with Jhum, specifically in farm-level practices, forest and biodiversity conservation, and disaster risk reduction measures. The research involved Focus Group discussions, key informant interviews, and questionnaire surveys with Jhum farmers from different age groups. The study identified 15 ILKPs, which were validated using the Mann-Whitney U test. The findings suggest that upholding ILKPs holds strong potential for local implementation of Sustainable Development Goals, such as SDG-1, SDG-2, and SDG-15. However, eight ILKPs showed a significant difference between older and middle-aged farmers, indicating a declining trend. The paper suggests policy measures to mainstream ILKPs to balance food

production and biodiversity conservation, ensuring future sustainability of Jhum cultivation in the region and beyond.

Aswathy et.al., (2022) stated that Triterpenoids, secondary metabolites, are widely used in medicine and preventive measures for chronic diseases. This study explores the anticancer potential of the ethnomedicinal plant Dillenia indica fruit extract against oral squamous cell carcinoma (OSCC). The extracts, containing betulinic acid (BA) and koetjapic acid (KA), were found to induce apoptosis and impart cytotoxicity in OSCC cell lines. The metabolites also significantly modulated key signaling pathways involved in cancer regulation. The findings offer valuable scientific support for indigenous knowledge, but in vivo validation is needed for clinical trials and commercial drug development. The findings provide valuable insights into the potential of triterpenoids in cancer treatment.

Significance of Study

Review of literature is an indispensable part of any kind of research. It helps the researcher to know the works done in a particular theme and the persons, institutions and publishers connected with that theme. It also helps in identifying future courses of research. The present paper on bibliometric analysis on Indigenous Knowledge is very useful for all the researchers who wants to make systematic, and smart literature review.

Objective

The objective of the current study is the bibliometric analysis of studies on "Indigenous Knowledge" in India and world.

Methodology

A literature review is an essential component of all types of research. Knowing the works done on a specific topic and the people, organisations, and publications associated with it is helpful to the researcher. It also aids in determining potential study directions. The bibliometric analysis utilized in the preparation of this research was conducted on October 12, 2023, using data from the lens.organisation platform. "Indigenous knowledge" OR "Traditional knowledge" are the keywords utilised to extract the data file for the current investigation. To improve the choices, numerous filters are added in addition to this. The information shows the documents that were

published between 1969 and 2023. Additionally, the documents that do not match the chosen keywords are removed, and the documents that do match the entire texts are included in this study. The data files pertaining to Indigenous Knowledge were taken from lens.org, which is a website owned and operated by Cambia, an autonomous non-profit social organisation. For this work, additional bibliometric analysis of the articles on IK was conducted using the VoS Viewer software. The world's and India's publications on Indigenous knowledge were examined independently.

Results

The bibliometric analysis of studies on indigenous knowledge has been divided into two categories i.e., studies done at India and studies done at global level. The findings on both the sections have been presented separately in the paper.

Year Wise Publications

The researchers will benefit more from knowing the material's publication date. To perform quality research, we require the most recent publications for certain types of research. To assess contemporary research scenarios, we require years-old published documentation for certain research projects. The published documents from 1969 to 2023 are included in this study. The study of indigenous knowledge began in 1969 and has continued ever since. Nevertheless, the current research field has benefited from a boost since 2000. Thereafter, there is an increase in the number of publications published in this field. The top 406 papers are released in 2022, with 2020 coming in second (Figure 1).

Region wise publications

Another specific index that aids in performing a literature study is region. By dividing the regions based on focus, we can identify the most highly investigated area, which may then be used to do research in a less concentrated area. We can also compare the field area to other researched areas. The data from the top ten nations or areas in terms of indigenous knowledge research is shown in the table no 1. According to this, South Africa has produced the greatest number of publications in the field of indigenous knowledge studies, with the United States coming in second. On the other hand, India is ranked seventh among the leading nations that conduct research on the transfer, protection, and use of indigenous knowledge.

Categories of Publications

The publications that are accessible to academics and professionals via Lens.org's database are shown in tableno2. A total of 3022 journal articles, 1084 book chapters on indigenous knowledge were published between 1950 and 2023. There have been 100 conference proceedings, 372 dissertations and 221 books published regarding indigenous knowledge and its application.

Journals Having Highest Publications

It is simple to identify journals that publish papers continuously in each field of study by searching through their archives; this allows us to select an appropriate journal for publishing our findings. According to the table no 3, SSRN Electronic Journal has published three publications in India, whereas Journal of Human Ecology has published the most, with four publications overall. Whereas the Indian Journal of Traditional Knowledge has 25 publications, Indilinga: African Journal of Indigenous Knowledge Systems has 127 publications, making it the most published journal overall.

Authors Having Highest Publication

Sixty percent of the top ten writers in the extracted database of literature on indigenous knowledge in India had published two or more papers. The writer Gopal Singh took the top spot, followed by L. N. Kakati and Gugu Khalala. According to the global database, Paul Sillitoe and Patrick Ngulube both have 17 published documents, while C. Thamban has 21 publications who secures the top spot (Table no 4).

Highest Cited Papers

When compared to other papers published in the same field in the same year, highly cited papers rank in the top 1% based on the quantity of citations obtained. Many citations might be seen as evidence of the paper's impact on the field and the research community's adoption of its conclusions or ideas. The highest cited article is "Ethnobotanical study of indigenous knowledge on medicinal plants used by the village peoples of Thoppampatti, Dindigul district, Tamilnadu, India" with 102 citations in the field of indigenous knowledge currently found in India. The paper "From Sink to Source: The Honeybee Network Documents Indigenous Knowledge

and Innovations" in India has 76 citations, making it the second most cited article. "Indigenous Knowledge of Zootherapeutic Use of Vertebrate Origin by the Ao Tribe of Nagaland" is the third top cited paper with 75 citations. The most cited work in the world, according to the data extracted for this study is "Indigenous Knowledge Systems and Alaska Native Ways of Knowing," which has 641 citations. "Development of Indigenous Knowledge: A new Applied Anthropology" is the second most referenced work with 611 citations, while "The Value of Indigenous Knowledge in Climate Change Mitigation and Adaptation Strategies in the African Sahel" is the third most cited study with 586 citations (table no 5).

Universities Having Highest Publications

Universities are important centres to conduct research on various themes. We might be able to identify which universities are actively engaged in a certain field of research by indexing them. In India the University of Delhi has the greatest number of publications (6), followed by the Council of Scientific and Industrial Research with 4, and Banaras Hindu University with 3. University of KwaZulu-Natal (59), University of British Columbia (26), and University of South Africa (69) are the top three universities of the world with the highest publications (table no 6).

Keyword Analysis

Findings more and less concentrated study areas within a given research theme is easier with the usage of keyword analysis. According to the current study's analysis of the image, the magnitude of the key phrases indicates how frequently a keyword is used in research papers. For instance, "Indigenous Knowledge" is the most frequently used term in this field of study, followed by "Indigenous People," "Traditional People," etc. Nevertheless, the colour of the keywords corresponds to the paper's theme. Some of the themes in which work is done are medicinal plants, conservation, climate change, and ecological sustainability (Figure no 2).

Discussion and Conclusion

The present study includes published documents from 1969 to 2023, that deals with research on indigenous knowledge. Research on indigenous knowledge gained momentum from 2000, with the highest number of papers published in 2022 and 2020. Region is also a useful index for literature review, allowing for comparisons between different research areas. South Africa has the highest number

of publications, followed by the United States. India ranks 7th in the top countries practicing studies on indigenous knowledge, transmission, and preservation. Lens.org database shows 3022 journal articles published from 1950 to 2023, including 1084 book chapters, 372 dissertations, and 221 books. There are also 100 conference proceedings. Identifying journals in a research area helps to identify suitable journals for publication. The Journal of Human Ecology has the highest number of publications, followed by SSRN Electronic Journal in India. Indilinga: African Journal of Indigenous Knowledge Systems is the highest-published journal, with 127 publications, followed by Indian Journal of Traditional Knowledge. Highly cited papers are those that have significantly impacted their field and have a significant impact on the research community. In the field of indigenous knowledge, the highest cited article in India is "Ethnobotanical study of indigenous knowledge on medicinal plants used by the village peoples of Thoppampatti, Dindigul district, Tamilnadu, India" with 102 citations. The second highest cited paper is "From Sink to Source: The Honeybee Network Documents Indigenous Knowledge and Innovations" with 76 citations. The third highest cited paper is "The value of indigenous knowledge in climate change mitigation and adaptation strategies in the African Sahel" with 586 citations. In the extracted database of literature on indigenous knowledge in India, 60% of the top 10 authors have published two papers. Gopal Singh is the top-ranked author, followed by Gugu Khalalaand L. N. Kakati. On the global database, C. Thamban is the top-ranked author with 21 publications, followed by Patrick Ngulube and Paul Sillitoe with 17 publications each. Universities play a vital role in conducting research work. University of Delhi has highest publications in India. Keyword analysis helps to identify more researched areas and less focused areas in specific research themes. Indigenous knowledge is the highest used term in this research field, followed by indigenous and traditional people.

Indigenous knowledge is crucial for creating just sustainable, and culturally alive future civilizations. It is dynamic and constantly changing, providing insights and practical solutions for today's problems. International bodies like the UN recognize the importance of indigenous knowledge, and national governments are incorporating it into policies and projects. Collaborative initiatives between indigenous communities, scientists, and policymakers are emerging to integrate traditional knowledge with modern approaches, leading to more holistic solutions in areas like biodiversity conservation and climate change adaptation. Indigenous communities are revitalizing their traditional knowledge systems through language revitalization, cultural awareness programs, and educational initiatives. Respecting the agency and self-determination of indigenous communities is essential.

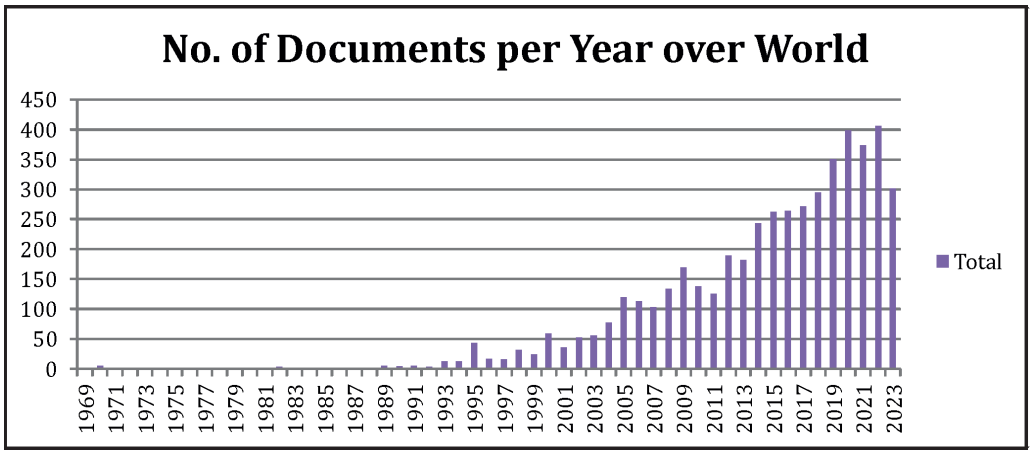

Figure 1: Publications of documents per year over world

Table :1 Region wise Publications

Country/Region	*Document Count*
South Africa	362
United States	303
Canada	213
Australia	189
United Kingdom	110
Indonesia	81
India	72
New Zealand	69
Nigeria	59
Zimbabwe	43

Table 2: Categories wise publications of documents at global level

Document Type	*Document Count*
Journal Article	3022
Book Chapter	1084
Dissertation	372
Book	221
Lib-guide	113
Conference Proceedings	100
Preprint	38
Review	29

Table 3: Top 10 Journals in India and World

India		*World*	
Journal name	*Document*	*Journal name*	*Document*
Journal of Human Ecology	4	Indilinga: African Journal of Indigenous Knowledge Systems	127
SSRN Electronic Journal	3	Indian Journal of Traditional Knowledge	25
International Journal of Disaster Risk Reduction	2	The Cultural Dimension of Development	22
Journal of ethnopharmacology	2	Indigenous Knowledge of Farming in North Malabar	21
Studies of Tribes and Tribals	2	International Information & Library Review	20
Traditional Ecological Knowledge of Resource Management in Asia	2	Cultural Studies of Science Education	19
2016 IST-Africa Week Conference	1	Ethnobotany Research and Applications	18
ACS pharmacology & translational science	1	Handbook of Research on Protecting and Managing Global Indigenous Knowledge Systems	18
Annals of Pharmacy and Pharmaceutical Sciences	1	AlterNative: An International Journal of Indigenous Peoples	17
Asian Journal of Home Science	1	Hometown Associations	17

Table 4: Top 10 authors in India and world

India		*World*	
Author Name	*Document Count*	*Author Name*	*Document Count*
Gopal Singh	2	C Thamban	21
Gugu Khalala	2	Patrick Ngulube	17
L N Kakati	2	Paul Sillitoe	17
Sanjay Bhushan	2	Chidi Oguamanam	14
Thongkholal Haokip	2	David Gordon	13
V Doulo	2	K M Sreekumar	12
A K Purohit	1	M Govindan	12
Abhik Ghosh	1	Charles L Briggs	10
Abijith Abraham	1	Christine Stilwell	10
Adam Runacres	1	George J Sefa Dei	10

Table 5: Highest cited articles in India and world

India			
Title	*Publication Year*	*Open Access*	*Citing Scholarly Works*
An ethnobotanical study of indigenous knowledge on medicinal plants used by the village peoples of Thoppampatti, Dindigul district, Tamilnadu, India.	2014	Non-OA	102
From Sink to Source: The Honey Bee Network Documents Indigenous Knowledge and Innovations in India	2006	Open Access	76
Indigenous Knowledge of Zootherapeutic Use of Vertebrate Origin by the Ao Tribe of Nagaland	2006	Non-OA	71
Indigenous knowledge organization: An Indian scenario	2006	Non-OA	69
The need for transformative changes in the use of Indigenous knowledge along with science for environmental decision-making in the Arctic	2020	Open Access	52
Indigenous knowledge of medicinal plants used by the Reang tribe of Tripura state of India.	2014	Non-OA	47
Indigenous Knowledge System of Zootherapeutic Use by Chakhesang Tribe of Nagaland, India	2002	Non-OA	44
Indigenous knowledge of using medicinal plants in treating skin diseases in Kanyakumari district, Southern India.	2009	Open Access	37
Promoting tribal communities and indigenous knowledge as potential solutions for the sustainable development of India	2019	Non-OA	17
Resilience learning and indigenous knowledge of earthquake risk in Indonesia	2021	Open Access	16
World			
Title	*Publication Year*	*Open Access*	*Citing Scholarly Works*
Indigenous Knowledge Systems and Alaska Native Ways of Knowing	2005	Non-OA	641
The development of indigenous knowledge: A new applied anthropology.	1998	Open Access	611
The value of indigenous knowledge in climate change mitigation and adaptation strategies in the African Sahel	2007	Non-OA	586
Protecting Indigenous Knowledge and Heritage: A Global Challenge	2000	Non-OA	563
The Cultural Dimension of Development: Indigenous knowledge systems - The cultural dimension of development: indigenous knowledge systems	1995	Open Access	437

Indigenous Knowledge Systems and Development	1980	Non-OA	399
The use of indigenous knowledge in development: problems and challenges:	2005	Open Access	391
Rethinking the role of Indigenous knowledges in the academy	2000	Non-OA	382
Indigenous knowledge and science revisited	2007	Non-OA	375
Indigenous Knowledge and the Cultural Interface: underlying issues at the intersection of knowledge and information systems	2002	Non-OA	356

Table 6: Top 10 Institutions in India and world

India		*World*	
Institution Name	*Document Count*	*Institution Name*	*Document Count*
University of Delhi	6	University of South Africa	69
Council of Scientific and Industrial Research	4	University of KwaZulu-Natal	59
Banaras Hindu University	3	University of British Columbia	26
Jawaharlal Nehru University	3	University of Toronto	24
Dayalbagh Educational Institute	2	University of Limpopo	21
Dr. Hari Singh Gour University	2	University of Venda	21
G.B. Pant Institute of Himalayan Environment and Development	2	North-West University	18
Gandhigram Rural Institute	2	University of Victoria	18
Gauhati University	2	University of Cape Town	17
Indian Council of Agricultural Research	2	Griffith University	16

Figure 2: Keyword Analysis

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