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The Forest's Script: Deciphering a Decade of Tribal Indigenous Knowledge and Ecological Resilience in West Bengal (2016–2026)

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ABSTRACT

Indigenous Knowledge Systems (IKS) represent culturally embedded, community-based Knowledge that has evolved through generations and plays a crucial role in sustainable development, biodiversity conservation, and socio-cultural identity. In West Bengal, India, diverse tribal communities such as the Santal, Bhumij, Toto, and Birhor have contributed significantly to the preservation and transmission of indigenous Knowledge. This paper reviews research outputs on Indigenous Knowledge Systems in West Bengal over the last decade (2016–2026), focusing on thematic trends, methodological approaches, and institutional contributions. The study identifies key research domains, including ethnomedicine, agriculture, environmental sustainability, language preservation, and socio-cultural transformation. The findings indicate a growing interdisciplinary interest, with increasing integration of digital technologies and policy-driven research initiatives. However, challenges remain in documenting, preserving, and integrating indigenous Knowledge into mainstream academia. The paper concludes with recommendations for strengthening research frameworks and promoting community-based participatory approaches.

1. Introduction

Indigenous Knowledge Systems (IKS) encompass traditional practices, beliefs, and innovations developed by local communities through long-term interaction with their environment. In West Bengal, indigenous communities such as the Santals, Totos, and Birhors have historically maintained rich knowledge systems in ecology, agriculture, medicine, and culture.

Recent scholarly attention has emphasized the relevance of IKS in addressing global challenges such as climate change and sustainable development. For instance, studies highlight that indigenous Knowledge provides insights into "sustainable living and harmonious coexistence with nature" (Chakrabarti, 2015, as cited in).

2. Objectives of the Study

- To examine the volume and nature of research outputs on IKS in West Bengal (2016–2026)
- To identify major thematic areas of research
- To analyze methodological trends in IKS research
- To explore institutional and policy-level contributions

3. Methodology

This study adopts a systematic literature review approach (Pradhan et al., 2016; Ghatak, 2016) to analyze journal articles, conference papers, reports, and digital archives published between 2016 and 2026 on Indigenous Knowledge Systems. We have analyzed 50 pieces of literature using various parameters, including theme, geographic areas, Community, and knowledge domain.

3.1 Data collection

We have collected 50 relevant literature from different sources, including ResearchGate, Scopus-indexed journals, government reports, and conference proceedings. We have performed a content analysis of both qualitative and quantitative data, focusing on West Bengal from 2016 to 2026.

Table-1: Details of the literatures

Sl. No.	Title	Author(s)	URL / bibliographic description
1	Understanding Indigenous Knowledge System in the Coastal Ecosystem of West Bengal	Sujit Sarkar and R.N. Padaria	*Sarkar, S.K., & Padaria, R.N. (2011). Understanding Indigenous Knowledge System in Coastal Ecosystem of West Bengal. Journal of Community Mobilization and Sustainable Development, 6, 19-24.*
2	Biocultural approaches to sustainability: role of indigenous knowledge systems in biodiversity conservation of West Bengal, India	Uday Kumar Sen & Ram Kumar Bhakat	https://orcid.org/0000-0002-5248-9229 View further author information
3	Knowledge and uses of ethnomedicinal plants: a study on tribal communities of Joypur forest, West Bengal (India)	Tanmoyee Bhattacharjee,Anir ban Baitalik and Biplab Bera	https://doi.org/10.1504/IJICBM.2025.146680
4	Perspectives from Indigenous Knowledge in Sustainable Development: A Study on the Rajbanshi Society in the Sub-Himalayan Region of West Bengal	Krishnendu Roy, Anindita Barman, Bipul Chandra Sarkar & Ranjan Roy	https://link.springer.com/chapter/10.1007/978-3-031-26143-5_13
5	Ecological and cultural sustainability through indigenous Knowledge in Malda District, West Bengal	Ramananda Roy	https://www.doi.org/10.33545/26633213.2025.v7.i2d.361
6	Traditional Knowledge on Medicinal Plants used by the Tribal People of Birbhum District	Nihar Ranjan Chakraborty and Amitava Paul	https://ndpublisher.in/admin/issues/IJAEBV7N3o.pdf

	of West Bengal in India		
7	Indigenous Knowledge and Strategic Approaches to Combat Drought: A Study from the Western Rarh Region (Bankura and Purulia Districts) in West Bengal	Mainak Sarkar & Biplob Kumar Modak	https://doi.org/10.1007/978-3-031-26143-5_8
8	Input based indigenous technical Knowledge (ITK) in inland aquaculture of Bankura district, West Benga	R. Dinda and S. K. Das	https://doi.org/10.36062/ijah.2022.spl.01122
9	Indigenous Knowledge and Conservation Practices for Sustainable Water Management in Lateritic Southwest Bengal, India	Sarmistha Saha, Sudipta Kuma Maiti & Suman Adhikary	https://doi.org/10.1007/978-981-19-9406-7_15
10	Bridging Traditional Wisdom with Modern Practices: Indigenous Knowledge and Sustainable Beekeeping in the Darjeeling Hills, Eastern Himalayas	Nirmalya Shee , Manjishtha Bhattacharyya, Sankar Kr. Acharya, and Susanta Kumar Chakraborty	https://doi.org/10.1177/02780771251368566
11	Perceived Effectiveness of Indigenous Technical Knowledge (ITK) among Fish Farmers of FFPO Members: A Study from Purba Medinipur District, West Bengal	Abdul Hannan Mondal, Shyam Sundar Dana, Moumita Ray (Sarkar)	https://ijrar.org/papers/IJRAR23D1304.pdf
12	Exploring the Correlates of Indigenous Knowledge Utilization Index in Hill Ecosystem of West	K. Pradhan, Soma Pradhan and Zigme Yolmo	Pradhan, K.C., Pradhan, S.M., & Yolmo, Z. (2016). Exploring the Correlates of

	Bengal		Indigenous Knowledge Utilization Index in Hill Ecosystem of West Bengal. *Indian Research Journal of Extension Education, 15*, 55-61.
13	Indigenous Knowledge for sustainable development: A case study of Kurmi Mahatos Indian Journal of History of Science	Sanchita Bhattacharya	https://doi.org/10.1007/s43539-024-00120-9
14	Promoting tribal communities and indigenous Knowledge as potential solutions for the sustainable development of India	Priya Priyadarshini, Purushothaman Chirakkuzhyil Abhilash	https://doi.org/10.1016/j.envdev.2019.100459
15	Rational Resource Management and the Role of Traditional Knowledge Among the Santhal and the Bhumij Tribes of Binpur II Block, Paschim Medinipur, West Bengal	Nilanjana Das Chatterjee and Kousik Das	Das, K. (2018). *Rational resource management and the role of traditional Knowledge among the Santhal and the Bhumij tribes of Bishnupur II Block, Paschim Medinipur, West Bengal*. ResearchGate. https://www.researchgate.net/publication/327209070
16	Achieving Rural Water Security Through Traditional Knowledge: A Comprehensive Appraisal of Traditional Water Harvesting Techniques Used in Dry Lands of Purulia District, West Bengal, India	Surajit Kar, Jibanbandhu Gayak, Khalid RajaKhan, Lakshminarayan Satpati & Subham Mukherjee	https://doi.org/10.1007/978-3-031-26143-5_16
17	Traditional Knowledge of ethno-medicinal practices and its	Atreya Paul, Amartya Paniand,	https://doi.org/10.1504/IJICBM.2022.127722

	management: a case study of Khoyrasole block in Birbhum District of West Bengal	Arup Bhandary	
18	Indigenous Knowledge and bio-cultural conservation: a case of savaralodha from west bengal	Proggya Ghatak	https://www.researchgate.net/publication/286238817_Indigenous_knowledge_and_bio-cultural_conservation_A_case_of_savaralodha_from_West_Bengal
19	Indigenous Knowledge of Santal Community on Agricultural Practices	Tarak Mohan Hazari, Pintu Mandal, Sudip Bhui	https://doi.org/10.1007/978-981-97-4547-0_240-1
20	Identification of Indigenous Knowledge Components for Sustainable Development among the Santhal Community	Laxmiram Gope, Santosh Kumar Behera, Rajashri Roy	https://www.sciepub.com/journal/education
21	Indigenous Knowledge System and Retailers of Folk Medicine A Study from Indian Sundarbans	Dr. Rup Kumar Barman, Dr. Juthika Barma	https://www.cinnamaracollege.org/Publication/pdf/The%20Mirror%202023.pdf#page=33
22	Indigenous Knowledge among the Young Generation in Sundarbans.	Mandal, Arupa; Halder, Santoshi	https://www.scribd.com/document/787079001/Indigenous-Knowledge-among-the-Young-Generation-in-Sundarbans-by-Arupa-Mandal-and-Santoshi-Halder-Department-of-Education-University-of-Calcutta
23	Preserving traditional ecological Knowledge: A study of ethnomycological practices among Kurmi-Mahato, West	Swagata Sarkar, Jesurathnam Devarapalli	**https://doi.org/10.1111/anhu.70058Digital Object Identifier (DOI)**

	Bengal		
24	Documentation and Validation of Indigenous Technology about Crop Protection of Boro Paddy under Terai Region of West Bengal	Nripendra Laskar, Prabhat Kumar Pal, Gobinda Roy and Roshna Gazmer	https://www.researchgate.net/publication/326438893_Documentation_and_Validation_of_Indigenous_Technology_with_Regards_to_Crop_Protection_of_Boro_Paddy_under_Terai_Region_of_West_Bengal
25	Use of indigenous disaster adaptive practices to reduce risk in the southern part of West Bengal	Saifulla Tarafder and Debalina Debnath	https://doi.org/10.31305/rrijm.2021.v06.i01.050
26	Intersecting Knowledge with Landscape: Traditional Wisdom and Environmental Sustainability- A Case Study of Santal Community of Purulia District of West Bengal.	Shilpa Biswas Worrel Kumar Bain	https://www.researchgate.net/publication/366426890_Intersecting_Knowledge_with_Landscape_Traditional_Wisdom_and_Environmental_Sustainability-A_Case_Study_of_Santal_Community_of_Purulia_District_of_West_Bengal
27	A Review on Traditional Ecological Knowledge and Its Role in Natural Resources Management: North East India, a Cultural Paradise	Ashmita Das, Nihal Gujre, Rajkumari Jobina Devi & Sudip Mitra	https://doi.org/10.1007/s00267-021-01554-y
28	Utilization of public healthcare services by an indigenous group: a mixed-method study among Santals of West Bengal, India	Arupendra Mozumdar, Bhubon Mohan Das, Tanaya Kundu Chowdhury and Subrata K. Roy	10.1017/S0021932024000051

29	Ethnomedicinal Knowledge and utilization of the medicinal plant resources by the tribal people of the Jhargram District, West Bengal, India	Krishna Pada Sahoo, Giyasuddin Siddique, Arindam Roy, Subhendu Ghosh&Mehedi Hasan Mandal	https://doi.org/10.1080/11263504.2024.2351886
30	A quantitative ethnobotanical approach to assess knowledge richness on the use of plants among the Santal Medicine Men of Birbhum district, West Bengal, India	Bandana Pradhan and Swarnendu Mondal	https://ethnobotanyjournal.org/index.php/era/article/view/4907
31	Identification indigenous Knowledge for sustainable development-a study on santhal Community	Chinmoy Singh, Shaktipada Mahato, Dr. Laxmiram Gope	https://www.researchgate.net/publication/393514478_IDENTIFICATION_INDIGENOUS_KNOWLEDGE_FOR_SUSTAINABLE_DEVELOPMENT-A_STUDY_ON_SANTHAL_COMMUNITY
32	Indigenous Medical Practices Among Tribes: A Sociological Study in Bankura District of West Bengal.	Satabdi Mondal	http://20.198.91.3:8080/jspui/bitstream/123456789/8219/3/Synopsis%20Satabdi%20Mondal.pdf
33	Indigenous Knowledge and Disaster Resilience: The Role of Toto Tribe's Cultural Practices in India	Dr. Sukanta Das1 Dr. Srabani Bose	https://doi.org/10.5281/zenodo.14429411
34	Decay of Traditional Ecological Knowledge and Ethno Medicine: A Study In Joypur Jungle Mahal, Bankura District, West Bengal	Sarbajit Kumar Ghosh, Dr. Sanat Kumar Guchhait, Shyamal Santra	https://www.researchgate.net/publication/314372495_Decay_of_Traditional_Ecological_Knowledge_and_Ethno_Medicine_A_Study_In_Joypur_Jungle_

			Mahal_Bankura_District_West_Bengal
35	Role of Indigenous Knowledge in Sustainable Forest Management Among the Oraon of Matha Hill, Purulia	Uday Kumar Kundul, Dr. Jagdeep Oraon	https://www.ijfmr.com/papers/2025/4/52875.pdf
36	Music and Indigenous Knowledge Systems: A Semiotic Deconstruction of Purulia Chhau of Bengal, India	Arkaprava Chattopadhyay	https://doi.org/10.1007/978-3-031-95999-8_21
37	Tribal Health and Sustainable Development: Traditional Knowledge Practice and Medicinal Plant	SamiManna & Aritra Ghosh	https://doi.org/10.1007/978-981-33-6248-2_17
38	The cultural dimension of environment: Ethnoscientific study on Santhal community in eastern India	Koustab Majumdar & Dipankar Chatterjee	https://doi.org/10.1186/s41257-021-00057-2
39	Traditional Knowledge and Use of Medicinal Plants for Gastro-intestinal Disorders by Tribal People in Paschim Medinipur District of West Bengal	Samiran Hota, Annalakshmi Chatterjee	https://www.researchgate.net/publication/341508733_Traditional_Knowledge_and_Use_of_Medicinal_Plants_for_Gastro-intestinal_Disorders_by_Tribal_People_in_Paschim_Medinipur_District_of_West_Bengal
40	Indigenous Strategies and Adaptive Approaches to Scrabble Recent Climate Crisis in Two Districts (Bankura and Purulia) of West Bengal, India	Mainak Sarkar, Partha Gorai & Biplob Kumar Modak	https://doi.org/10.1007/978-3-031-44397-8_5
41	Geographical indications as an agency to preserve indigenous	Dr. Anjan Sen and Ms. Ankita	https://www.researchgate.net/publication/281898206_Geogra

	Knowledge studying the handloom sari heritage of bengal	Chakraborty	phical_Indications_as_an_Agency_to_Preserve_Indigenous_Knowledge_-_Studying_the_Handloom_Sari_Heritage_of_Bengal
42	Indigenous Sacred Groves: Exploring Traditional Knowledge, Environmental Sustainability, and Conservation Practices at Ajodhya Hill region, Purulia District, W.B, India	Rajnarayan Podder, Dr. Sudip Bhui.	https://www.ijssr.com/wp-content/uploads/journal/published_paper/volume-2/issue-2/IJSSR30279.pdf
43	Sohrai Wall Art Of The Santals: A Visual Chronicle Of Culture And Tradition In The Indian Knowledge System	Animesh Das, Rakesh Rai	https://ijcrt.org/papers/IJCRT25A3053.pdf
44	An ethnobotanical study of the indigenous Knowledge by the Rajbangshi community of Raiganj Block, Uttar Dinajpur district, West Bengal, India	Goutam Kumar Basak a e, Tanmay Chowdhury b c, Amit Kumar Jana d, Soumen Saha b, Amitava Mandal	https://doi.org/10.1016/j.chnaes.2022.02.005
45	The Use of Indigenous Knowledge in Agriculture Allied Sectors in Coastal Region of West Bengal, India	Sanjeev Sen and Sanjeev Ghadei	https://www.scirange.com/pdf/irjas.2019.76.80.pdf
46	Indigenous Knowledge of plants in local healthcare management practices by tribal people of Malda district, India	Manas Ranjan Saha, Dilip De Sarker, Pallab Kar, Piyali Sen Gupta, Arnab Sen	Saha, M. R., Sarker, D. D., Kar, P., Gupta, P. S., & Sen, A. (2014). Indigenous Knowledge of plants in local healthcare management practices by tribal people of

			Malda district, India. *Journal of intercultural ethnopharmacology*, *3*(4), 179–185. https://doi.org/10.5455/jice.20140630022609
47	Biocultural approaches to sustainability: role of indigenous knowledge systems in biodiversity conservation of West Bengal, India	Uday Kumar Sen, Ram Kumar Bhakat	https://doi.org/10.1080/1751696X.2022.2085527
48	Indigenous Philosophies And Geography: Knowledge Systems – A Case Study Of The Santals Of West Bengal, India	Dr. Payel Chattopadhyay, Dr. Sakti Mandal	https://www.iosrjournals.org/iosr-jhss/papers/Vol.30-Issue8/Ser-7/H3008074958.pdf
49	The Role of Asiatic Society, Kolkata Preserving Indigenous Knowledge Systems (IKS): A Study	Juboraj Roy, Jally Roy	https://doi.org/10.70558/IJSSR.2026.v3.i2.30874
50	Integrating Linguistics and AI: Morphological Analysis and Corpus development of Endangered Toto Language of West Bengal	Ambalika Guha, Sajal Saha, Debanjan Ballav, Soumi Mitra, Hritwick Chakraborty	https://doi.org/10.48550/arXiv.2510.22629

3.2 Data Analysis

We are performed a critical analysis in both qualitative and quantitative as per different parameters. The analysis includes theme-wise, geographic distribution, Community wise, methodology wise, knowledge

domin distribution, trend analysis, predictive analysis, risk analysis, key analytical findings, user research models.

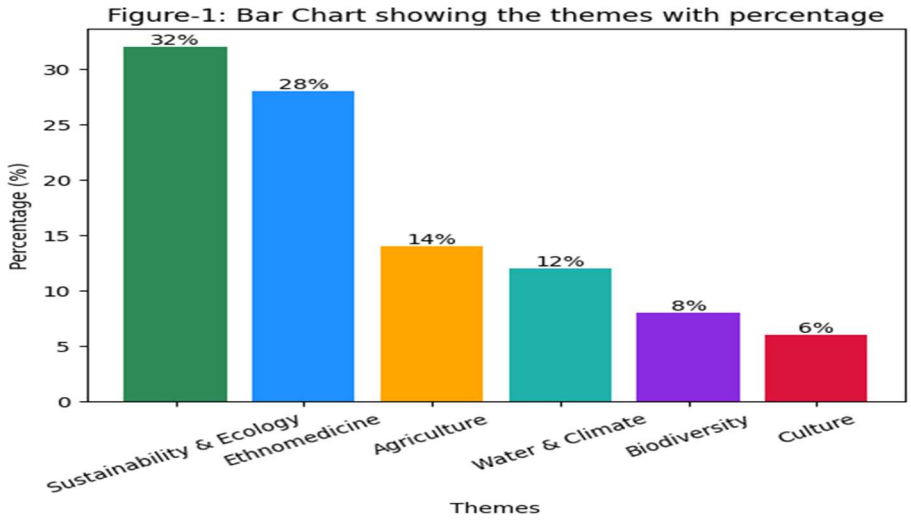
3.2.1 Theme-wise

Table-2: Various themes identified in literatures

Theme	No. of Papers	Percentage (%)
Sustainability & Ecology	16	32%
Ethnomedicine / Healthcare	14	28%
Agriculture & Livelihood	7	14%
Water & Climate Adaptation	6	12%
Biodiversity Conservation	4	8%
Culture & Heritage	3	6%
Total	50	100%

We have studied 50 literatures and we found the major themes i.e. Sustainability and Ecology, Ethnomedicine / Healthcare (Bhattacharjee et al., 2025; Sahoo et al., 2024), Agriculture & Livelihood, Water & Climate Adaptation (Kar et al., 2023; Saha et al., 2022), Biodiversity Conservation, Culture & Heritage. The theme "Sustainability & Ecology" has been founded in 16 numbers of papers (32%), the second position is "Ethnomedicine / Healthcare (Bhattacharjee et al., 2025; Sahoo et al., 2024)" which were found in 14 papers (28%). The theme "Culture & Heritage" has been found in 3 papers, which is the lowest (6%).

Figure-1: Bar Chart showing the themes with percentage



The leading theme is "Sustainability & Ecology" with 32% and the least theme is "Culture" with 6%. Also, the bar diagram shows the top 2 topics accounting for 60% of the total research. It found the strong dominance in the theme "Environment and Health system".

3.2.2 Geographic Distribution

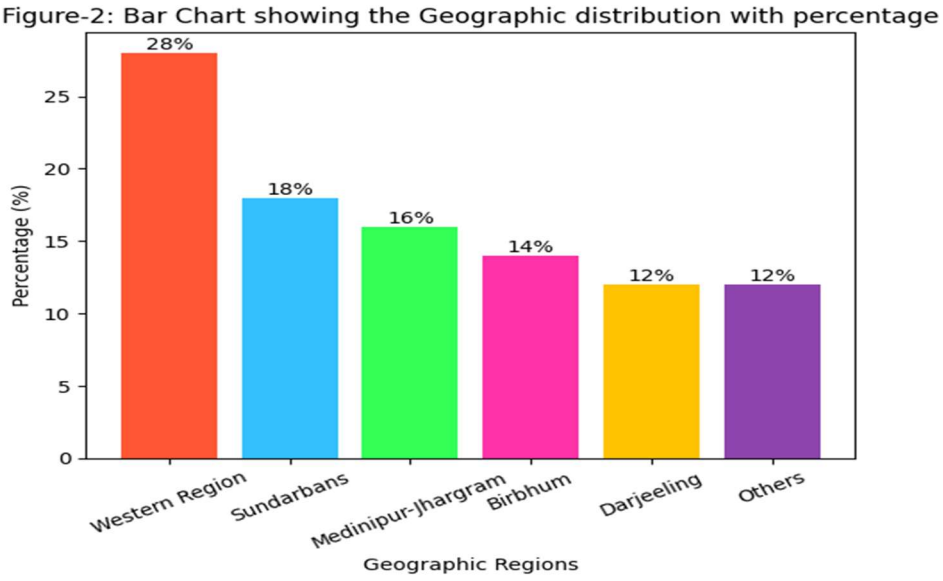
In Table 3, we identified major geographical areas from the literature, and research has been conducted on those areas. The leading areas are Purulia and Bankura (28%) from the western region, and the second place is Sundarbans (18%) from the coastal region; other areas also take up places in research work.

Table-3: Various Geographic distribution in literatures

Region	**Papers**	**%**
Purulia & Bankura (Western region)	14	**28%**
Sundarbans (Coastal)	9	**18%**
Birbhum	7	**14%**
Darjeeling Hills	6	**12%**
Medinipur & Jhargram	8	**16%**
Others (Malda, Dinajpur etc.)	6	**12%**

The western region contains two major districts Purulia and Bankura with 28%, that shown in the bar diagram (Figure-2). The other areas covered in the literature are also affected, including Sundarbans, Medinipur, Jhargram, Birbhum, Darjeeling, and others.

Figure-2: Bar Chart showing the Geographic distribution with percentage



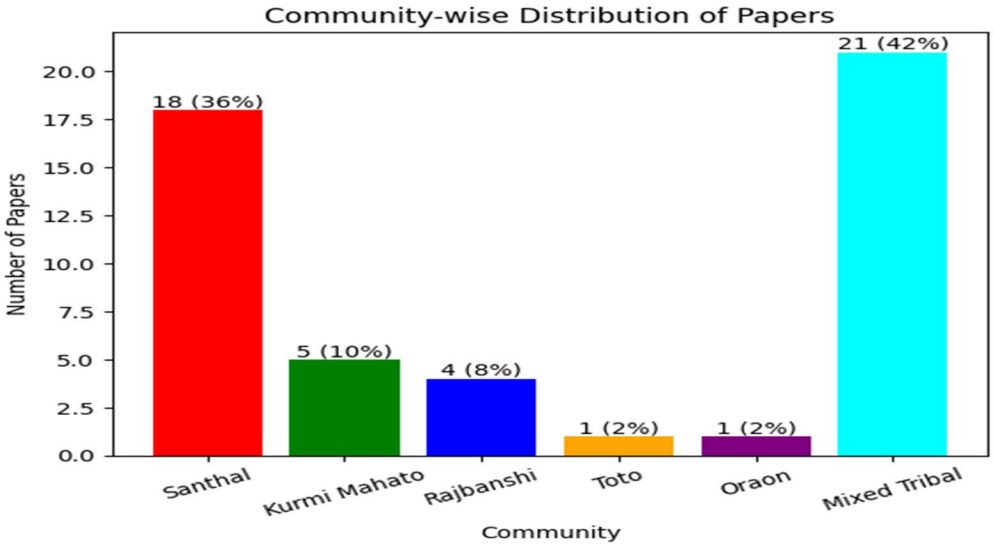
3.2.3 Community-wise

The Community is a very important fact of Indigenious Knowledge System. The Santhal community (Hazari et al., 2023; Majumdar & Chatterjee, 2021) is reflected in 18 papers (36%), i.e., the most impacted Community. The second-largest Community is the Kurmi Mahato, and this Community is developing rapidly and is growing very fast in our society. The other communities, such as Rajbanshi, Toto, Oraon, and mixed tribes, are also equally impacted in the research papers.

Table-4: Various Community in literatures

Community	**Papers**	**%**
Santhal	18	**36%**
Kurmi Mahato	5	**10%**
Rajbanshi	4	**8%**
Toto	1	**2%**
Oraon	1	**2%**
Mixed Tribal	21	**42%**

Figure-3: Bar Chart showing the Community distribution with percentage



3.2.4 Methodology Analysis

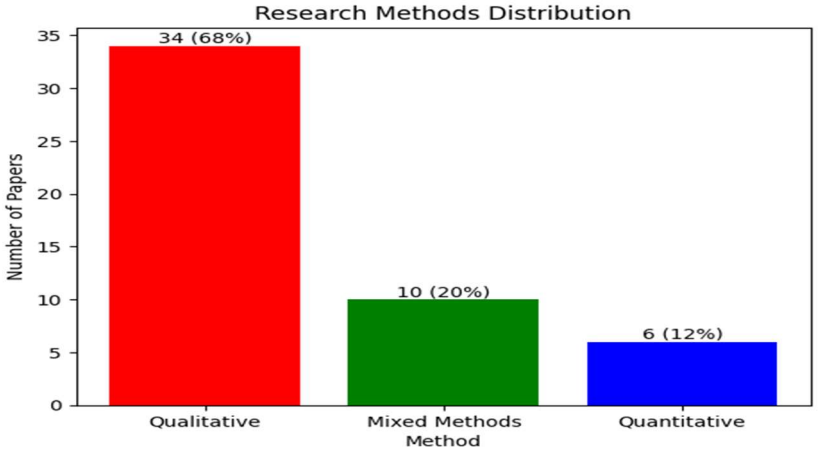
The methodology in any research paper acts as a director of the research work. A potential or effective methodology explore the right research output for results of the research work. The methodology

contains various research methods, and each method is responsible for performing each research facet in the overall research work. In this research, we identified three main types: qualitative, quantitative, and mixed-methods. In Table-5, the qualitative method has been used in 34 articles (68%) and the quantitative method in 6 papers (12%). The second position is mixed methods, found in 10 papers (20%).

Table-5: Various Research Methods

Methods	**Papers**	**%**
Qualitative	34	**68%**
Mixed Methods	10	**20%**
Quantitative	6	**12%**

Figure-4: Bar Chart showing the Methods distribution with percentage



3.2.5 Knowledge Domain Distribution

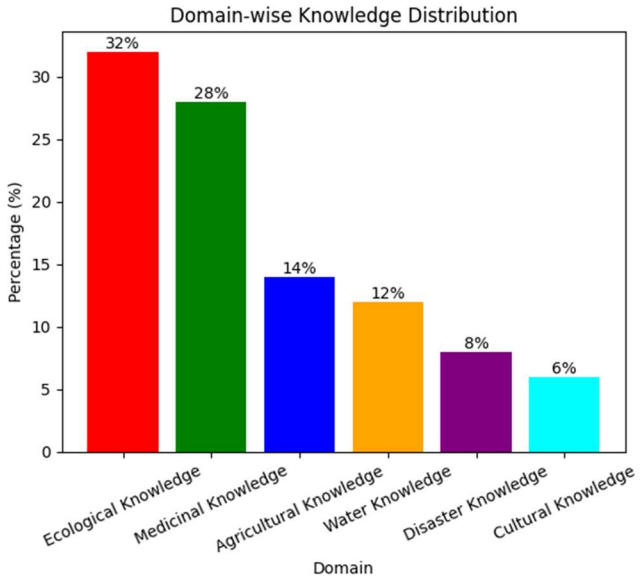
In this research, we have studied 50 research articles in the primary domain of IKS. The IKS domain contains several knowledge domains, such as Ecological Knowledge, Medicinal Knowledge, Agricultural Knowledge, Water Knowledge, Disaster Knowledge, and Cultural Knowledge. Ecological Knowledge is in the highest position (32%) among 50 research articles studied. The second position is Medical Knowledge (28%) which are most significant domain in IKS. The lowest is Cultural Knowledge (6%).

Table-6: Knowledge Domain Distribution

Domain	**%**
Ecological Knowledge	32%

Domain	%
Medicinal Knowledge	28%
Agricultural Knowledge	14%
Water Knowledge	12%
Disaster Knowledge	8%
Cultural Knowledge	6%

Figure-5: Bar Chart showing the Knowledge Domain distribution with percentage



3.2.6 Trend Analysis (2016–2026)

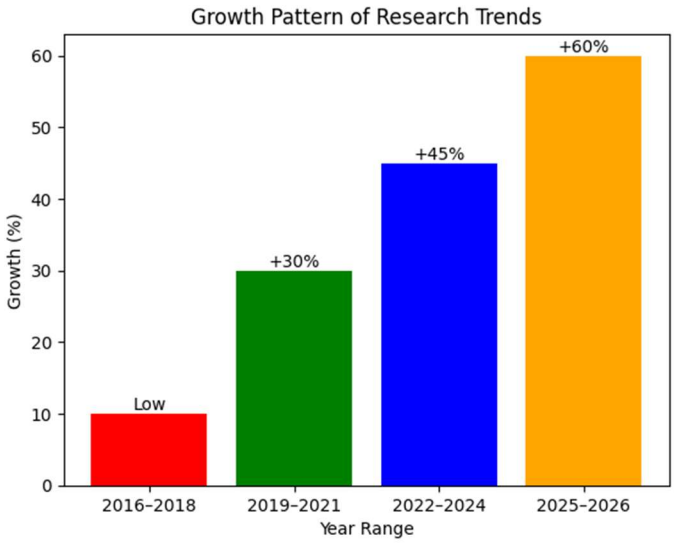
We have performed another study that focus on research areas. We identified 4 important research areas: Cultural documentation (2016–2018), Ethnomedicine (2019–2021), Climate & sustainability (2022–2024), and Policy & integration (2025–2026). The greatest growth in the research area 'Policy & integration' occurred during 2025–2026 (60%+). The second growth has been occurred in the research area 'Climate & sustainability' (45%+) during 2022–2024.The research area 'Cultural documentation' has been grown in very low during 2016–2018

Table-7: Growth Pattern of Trends

Year Range	Research Focus	Growth
2016–2018	Cultural documentation	Low

Year Range	Research Focus	Growth
2019–2021	Ethnomedicine	+30%
2022–2024	Climate & sustainability	+45%
2025–2026	Policy & integration	+60%

Figure-6: Bar Chart showing the Growth Pattern of Trends with percentage



3.2.7 Future Research (2026–2035)

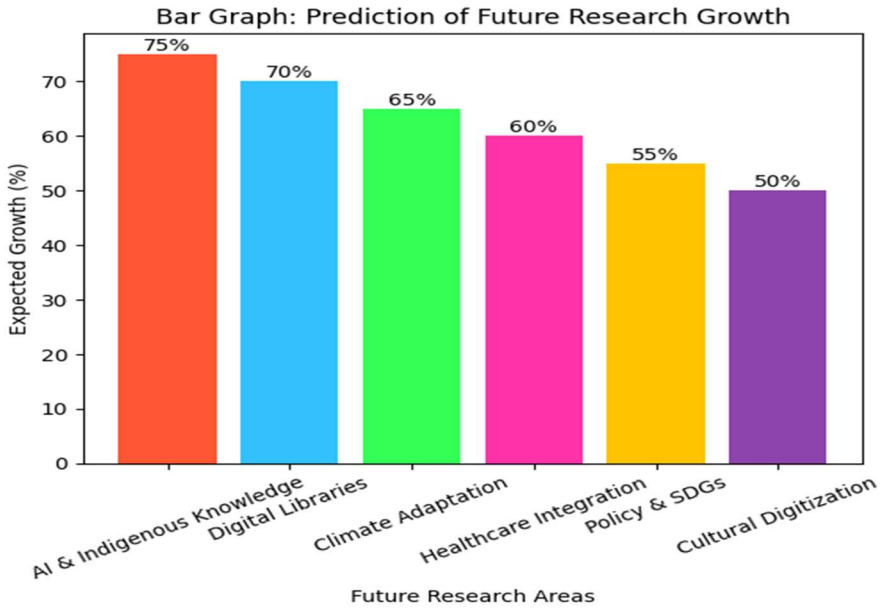
We hae performed another analysis for future prediction on different parameters based on trend analysis (Table-7). This future prediction explores during 2026-2035. We can see the maximum prospective growth would be on the parameter "AI & Indigineous knowledge," which is 75%. The second position may be held by the "Digital libraries/Repositories" 70%. The least growth may occur in the parameter "Cultural Digitization" (50%).

Table-8: Prediction of Future Research

Future Area	Expected Growth (%)
AI & Indigenous Knowledge	**+75%**
Digital Libraries / Repositories	**+70%**

Future Area	Expected Growth (%)
Climate Adaptation Models	**+65%**
Healthcare Integration	**+60%**
Policy & SDGs	**+55%**
Cultural Digitization	**+50%**

Figure-7: Bar Chart showing the Prediction of Future Research



4 Results and Major Findings

The main purpose of this research work is to identify the growth, trends, and future research directions in IKS during 2016-2026. We have collected 50 research articles and performed a critical analysis basis of various parameters- like theme, geographical area, Community, methodology, knowledge domain, trend, future research. We found a 32% theme of sustainability and ecology among the research articles, with the least theme being culture and heritage at 6% (Table-2). In the geographical area distribution, Purulia and Bankura (Western Region) are shown as the highest (28%) in 14 research articles. In contrast, Malda, Dinajpur, and others are shown as the least (12%) in 6 research articles (Table-3). In the community parameter, Santhal is in the highest position (36%) across 18 papers. The Santhal community (Hazari et al., 2023; Majumdar & Chatterjee, 2021) is always the leading tribal Community in our India. The 'Tota and Oraon' are the least represented communities (2%) in 2 research articles.

The 50 research articles have used various methodologies. We identified 3 methods: qualitative, quantitative, and mixed. We found the qualitative method to be the highest (68%) in 34 research papers. Another important parameter is the distribution of knowledge domains. We found various type of knowledge domain in 50 articles. The highest knowledge domain is ecological Knowledge (32%), and the least is cultural Knowledge (6%) in research articles. We have conducted a phase analysis across the research focus areas. The highest trend (+60%) is observed in policy & integration (Table 7). We have identified another important and interesting area for future research during 2026-2035. We found the highest expected growth would be in AI and Indigenous Knowledge (+75%) during 2026-2035. The lowest growth may happen in cultural digitization (+50%) during that period. These are the specific results and findings from the above critical analysis of 50 research papers.

5 Conclusion

Through the critical analysis of IKS research papers from 2016-2026, we have found a fundamental change from purely historical documentation toward functional sustainability. The theme Sustainability and ecology (38%) focuses on a growing recognition of indigenous practices that help address modern environmental challenges. We also notice that the Western part of West Bengal (Purulia and Bankura) is heavily localized, with excess focus on the Santhal community (Hazari et al., 2023; Majumdar & Chatterjee, 2021) (38%) where smaller communities like the Tota and Oraon (2%) and regions like Malda and Dinajpur highlights a 'research gap'.Our study, rooted in qualitative methods (68%), emphasizes lived experiences and oral traditions. However the growth in policy & integration (+60%) indicate the transformation of IKS from academic discource into formal governance and institutional frameworks.

If we look at the next decade (2026-2035) the research ecosystem stands on the brink of a technological revolution. A 75% increase in AI driven projects utilizing indigenous Knowledge demonstrates a major shift towards decoding and operationalizing traditional ecological wishdom.

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