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TOURISM INNOVATIONS: A JOURNAL OF INDIAN TOURISM AND HOSPITALITY CONGRESS (ITHC) is a bi-annual international referred research Journal focusing on academic perspectives in Tourism and Hospitality. Being an journal of inter-disciplinary field, the journal focuses on various aspects of tourism and hospitality like, Tourism Issues, Tourism Impacts, Eco-tourism, Sustainable Tourism, Tourism Marketing, Medical Tourism, Health Tourism, Culture Tourism, Culinary Arts, Service Operations and other tourism, trave and hospitality areas. The objective of the journal is to have a comprehensive collection of research articles and dispersal of updated knowledge and information about tourism sector.

All Correspondence Should be Address to : Managing Editor
Tourism Innovations
Bharti Publications
4819/24, 3rd Floor, Mathur Lane, Ansari Road, Daryaganj, New Delhi-110002
Email: journal.itc@gmail.com, bhartipublications@gmail.com
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TOURISM INNOVATIONS

An International Journal of Indian Tourism and Hospitality Congress (ITHC)

Chief Editors

Prof. S. P. Bansal

Vice Chancellor,
Central University of Himachal Pradesh
Dharamshala, Himachal Pradesh

Prof. Sandeep Kulshrestha

Director, Centre for Promotion of Ecological, Adventure,
Health and Cultural Tourism, Central University of Himachal Pradesh
Dharamshala, Himachal Pradesh

Indian Tourism and Hospitality Congress
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Managing Editor
Tourism Innovations
Bharti Publications
4819/24, 3rd Floor, Mathur Lane
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Editorial:
Tourism and Peace – The Essential Synergy for a Harmonious Global Future

As the world celebrates World Tourism Day under the theme "Tourism and Peace," it is essential to reflect on the profound relationship between tourism and the pursuit of peace. In a world marked by economic disparities, cultural differences, and political tensions, tourism stands as a bridge that connects societies, promotes mutual understanding, and fosters harmony. This year's theme calls upon governments, industries, and individuals to recognize the transformative power of tourism as not just an economic driver but also as a tool for building and sustaining peace.

Tourism is inherently an act of cultural exchange. As travelers visit new destinations, they immerse themselves in the traditions, values, and histories of other cultures. This act of cultural immersion has the potential to challenge stereotypes, diminish prejudices, and foster empathy. The intercultural dialogue that tourism facilitates encourages an appreciation of diversity and cultivates a sense of shared humanity. When people from different backgrounds meet and interact in a peaceful and friendly setting, it becomes much harder to view the "other" as a threat. Rather, the other becomes someone with a different perspective, shaped by unique cultural experiences, but still fundamentally human.

International tourism, which involves the crossing of borders and the interaction between people of diverse nationalities, plays an essential role in promoting peace. For example, people-to-people interactions through tourism in conflict zones or between communities that have experienced historical tensions can foster reconciliation. In such situations, tourism becomes an avenue for shared experiences that highlight commonalities rather than differences, contributing to the healing of past wounds. A traveler who experiences the warmth and hospitality of another culture is more likely to develop positive perceptions of that culture, leading to greater intercultural tolerance and less likelihood of conflict.

One of the most tangible ways tourism contributes to peace is through its economic impact. Tourism is a vital industry for many countries, providing jobs and income that support livelihoods. When tourism flourishes, it can improve the economic well-being of local communities, leading to a reduction in poverty and social inequality—two major contributors to unrest. By creating economic opportunities, tourism can promote stability, as people have a greater incentive to preserve peaceful conditions that allow for continued economic prosperity.

For developing nations, especially those recovering from conflict, tourism can be a crucial industry for reconstruction. Take, for example, countries such as Cambodia and Rwanda, both of which have leveraged their tourism sectors to rebuild after periods of intense conflict. In these cases, tourism has been instrumental in reintegrating former combatants into society by providing employment opportunities. Furthermore, as tourism brings in foreign investment and creates jobs, it helps reduce social tensions that often arise from economic disparities.

Moreover, governments are more likely to maintain peaceful environments when tourism plays a significant role in their national economy. Peace is not only necessary for tourism to thrive, but it is also maintained as a consequence of tourism's success. Countries that rely on tourism revenue are less likely to engage in aggressive policies that could deter tourists. For instance, the small Pacific Island nation of Fiji, which faced military coups in the late 20th century, has found that maintaining political stability is crucial for its tourism industry, which is a significant part of its economy. Thus, tourism can act as a motivator for peace on a national scale.

Sustainable tourism, with its emphasis on responsible travel that minimizes environmental impact and supports local cultures, has a particularly important role in peacebuilding. It is a model that encourages travelers and the tourism industry to be mindful of their effect on destinations. By promoting environmental conservation and the protection of local cultures, sustainable tourism advocates for a future where human activity, including tourism, supports the well-being of both people and the planet.

One of the key aspects of sustainable tourism is community involvement. When local communities are empowered to manage and benefit from tourism, it fosters a sense of ownership and pride. This, in turn, creates conditions for peace, as local residents see tourism as a positive force for their development. Sustainable tourism ensures that the benefits of tourism are not concentrated in the hands of a few, but rather distributed across communities, reducing the likelihood of social conflicts over resources. Moreover, involving local populations in decision-making processes related to tourism development promotes transparency and builds trust between communities and government authorities.

In post-conflict societies, sustainable tourism can aid peacebuilding efforts by ensuring that tourism development

respects the social and cultural sensitivities of affected communities. For example, in Bosnia and Herzegovina, tourism has been used as a tool to foster reconciliation between ethnically diverse populations. Guided tours that focus on the country's multicultural heritage and the impacts of the Bosnian War allow visitors to engage with difficult historical narratives, promoting dialogue and understanding between different ethnic groups. In such cases, tourism becomes a platform for peace education, helping visitors and locals alike to reflect on the causes of conflict and the importance of coexistence.

While tourism has immense potential as a force for peace, it is not without its challenges. The rapid expansion of tourism can sometimes lead to negative consequences such as cultural commodification, environmental degradation, and over-tourism, which can strain local resources and lead to resentment among host communities. These issues must be addressed carefully to ensure that tourism remains a positive force for peace.

Additionally, tourism in conflict zones or politically unstable regions can sometimes exacerbate tensions if not managed properly. Tourists may be perceived as outsiders or even as a threat by local populations, especially if tourism development displaces local communities or disregards their cultural practices. It is therefore crucial for governments and tourism operators to engage with local communities in a respectful and inclusive manner, ensuring that tourism benefits everyone.

Tourism professionals and stakeholders must take responsibility for ensuring that the industry promotes peace. This requires a commitment to ethical practices, including respect for human rights, cultural heritage, and the environment. It also means using tourism as a platform to raise awareness about peace and conflict issues, encouraging travelers to be responsible global citizens.

The theme of "Tourism and Peace" for this year's World Tourism Day is both timely and necessary. As we navigate a world fraught with political and social challenges, tourism offers a powerful tool for fostering peace and understanding across borders. By promoting cross-cultural dialogue, economic stability, and sustainable development, tourism can contribute to a more peaceful and harmonious world. However, this potential will only be realized if we commit to ethical tourism practices that respect and uplift local communities.

Let us use this World Tourism Day as a reminder that tourism is not just about travel—it is about building bridges, promoting understanding, and contributing to global peace. With thoughtful planning, responsible practices, and a focus on sustainability, tourism can continue to be a driving force for peace in our world.

Chief Editors
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Contents

Millets Adaptability Amongst People of Punjab

Raj Kumar, Siddhant Bhattacharya & Harpreet Singh

Abstract

Millets, traditionally considered as staple crops in African and Asian regions, are gaining attention in India's northern state of Punjab. Historically, Punjab's cuisine has centered around wheat and rice, but a growing awareness of health and sustainability has led to a renewed interest in millets. This abstract explores the factors contributing to millets' adaptability amongst the people of Punjab and assesses their potential benefits for the region's food security and health outcomes. The resurgence of millets in Punjab can be attributed to their high nutritional value, gluten-free properties, and sustainability. Millets are rich in essential minerals, fiber, and proteins, making them a healthy alternative to wheat and rice-based diets. Additionally, millets require less water and have a longer shelf life, aligning with Punjab's need for sustainable agricultural practices amidst concerns about water scarcity and climate change. Public health experts suggest that millets could play a role in addressing chronic diseases like diabetes and cardiovascular conditions, which are prevalent in Punjab. This potential health benefit, coupled with the grains' versatility in cooking, has contributed to the growing popularity of millets among health-conscious consumers. In response to this trend, local farmers and food producers are exploring millet cultivation and creating innovative millet-based products. This shift reflects an evolving food culture in Punjab, where traditional dishes are being reimagined with millets, offering a nutritious and sustainable approach to daily meals. Despite these promising signs, challenges remain in terms of consumer education and the development of supply chains for millet-based products. However, with the right support from agricultural and health sectors, millets have the potential to become an integral part of Punjab's diet, promoting health and sustainability across the region.

Keywords: *Millets, Health, Sustainable, Fiber.*

Introduction

Throughout late years, the quality food agitation has offered way to deal with track down the value of standard millets. Especially with the extending prosperity mindfulness among people, there has been a rising in light of a legitimate concern for supplement rich grains like millets. No huge shock because millets have created as frenzy among millennial for its umpteen clinical benefits. If you are looking for an overview of standard millets and their clinical benefits, read on. Millets are oat harvests and little seed grasses, which are comprehensively used in African and Asian countries. Fundamentally created in the semiarid tropical areas of Africa and Asia, around 97% of world's overall millet creation happens in these regions. Clinical benefits of millets since age's millets were generally used to deal with birds and animals, until the clinical benefits of proposition super food sources were known to the world. Regardless, in various bits of India, millets were used for a collection of dishes. Especially, for their astonishing enhancement rich design. Truth is told, India is known as the second greatest diabetes capital of the world, and this has led to the flood in light of a legitimate concern for millets. Moreover, these gluten free millets can expect a basic part in thwarting and re-establishing a couple of clinical issues. Improved with the respectability of nature, millets are a rich wellspring of fiber, minerals like magnesium, phosphorous, iron, calcium, zinc and potassium. According to the prosperity and sustenance ace Tapasya Mundhra, 'Millets are unimaginably nutritious and helpful for prosperity and they similarly need less water and can take care of for a seriously significant time-frame, as they have a long time period of sensible ease of use. Millets make for an optimal quality supper. Believe it or not, it is typical urged to design millets as porridge for creating youngsters and developing adults. Likewise, millets are stacked with

Raj Kumar *Assistant Professor, Guru Nanak Dev University, Amritsar, Punjab*
Siddhant Bhattacharya *Assistant Professor, Guru Nanak Dev University, Amritsar, Punjab*
Harpreet Singh *Assistant Professor, Guru Nanak Dev University, Amritsar, Punjab*

high proportion of starch and proteins, which can be useful, at whatever point added to the ordinary eating regimen.' millets are sound as well as all the while they have an intriguing taste, which can supplement the taste rest of any dinner. With various culinary turns of events, millets like ragi, jowar and bajra are used to set up a couple of chomps and dishes like Ragi Idli, Millet Khichdi, Apple Ragi Halwa (sound for children), Ragi Treats, etc. Moreover, millets can make dinners elegant and ostensibly captivating.' In this way, here's a done for on how choice of millets in each day diet would amp have the option to up the prosperity remaining portion and monitor contaminations and give copious food.

Significance of the study

These little grains are an amazing powerhouse of food, which help in further developing heart prosperity and can reasonably lessen coronary blockage. It is improved with the honesty of magnesium, which can enough reduce circulatory strain and peril of stroke and coronary disappointments. Especially, millets can assist in diminishing the peril of ailments with enjoying atherosclerosis. Well off in potassium, millets can effectively work as a vasodilator. Moreover, the plant lignans in millets can be changed into animal ligans, which can fight determined afflictions like threatening development and other coronary diseases. Millets can manage sugar level, Millets are a rich wellspring of magnesium, which help in vitalizing the level of insulin, thus extending the viability of glucose receptors in the body, which further assists in keeping a decent plan of sugar level in the body. This assistants in diminishing the chance of diabetes type 2. To extra balance the sugar level you can add flaxseeds, makhana, red rice, dull rice. Millets advance retention Wealthy in fiber, millets make for a strong grain, which can help in digestion and can mitigate inside issues. It helps in gastrointestinal issues and can ease in various contaminations related to the liver and kidney. Adding noni crush and dull grapes in your consistently diet can prevent illness. Helps in detoxification Millets are stacked with the fragments, for instance, curcumin, ellagic destructive, Quercetin and catechins, which further help with disposing of new subject matter experts.

Objectives of the study

- To learn about history and nutritive structure as it's anything but a staple diet.
- To study about millet adaptability in Punjab.
- To become acquainted with various sorts of Millets.
- To learn about millets as a sound substitute to wheat and refined flour.

Background of the study

Millets are a get-together of significantly factor minimal developed grasses, extensively fostered all through the planet as oat yields or grains for human food and as feed. There is evidence of the advancement of millet in the Korean Promontory dating to the Center Jeulmun Earthenware Period (around 3,500-2,000BC). In India, millets have been referred to in unquestionably the most prepared Yajurveda messages, perceiving foxtail millet (priyangava), Farm millet (aanava) and dull finger millet (shyaamaka), thus showing that millet. For sure, even until 50 years earlier millets were the huge grain filled in India. From a staple food and fundamental piece of neighborhood food social orders, really like various things, millets have come to be looked descending on by present day metropolitan purchasers as "coarse grains" - something that their town antecedents might have lived on, but that they had deserted and exchanged for a more "refined" diet. Amazingly, this said refined gobbling routine miss the mark on the enhancements on a very basic level huge for us (food should be just about as neighborhood and sound as could be anticipated). Following the western model of progress, India and other non-modern nations have passed up a lot of supportive and huge things. Food penchants have been most likely the best change. We are quickly neglecting to recall our local food sources and chasing after standardization. Millets additionally have been discarded as being too rough to possibly be in any capacity used, neglecting to recollect the roots. These changes, joined with state plans that favor rice and wheat, have provoked a sharp lessening in millet creation and usage. Before Green Transformation, millets made up around 40% of each and every created grain (offering more than wheat and rice). Regardless, since the disturbance, the making of rice has extended doubly and wheat creation has altogether expanded. There is a hypothesis that an inclination in government plans that kill millets, which fill very well in various, restricted scope, low-input developing structures and are mind blowing for little farmers' livelihoods, is because they offer no advantage for agro-engineered associations, huge food associations, etc. so the progression of rice and wheat, which credit themselves to exorbitant interests in equipment, mutt seeds, manures, pesticides, etc., were an essentially more beneficial money related framework. With respect to the food system organizers and state-run administrations one might add that by then, many acknowledged that substance cultivating would further develop yields and food security long term. Regardless of the way that India is the world pioneer to the extent that making of millets, it should not be neglected to recollect that the piece of millets in full scale grain creation had dropped from 40 to 20 percent, provoking a few veritable cultivating, normal and refreshing outcomes. Rice has displaced millets as to be eaten directly; while wheat flour has replaced flours made from millets, and are right now used extensively to make Indian breads.

Literature review

As shown by (Saleh et. al., 2013) Millets are the grains crops which are available in different size and concealing as demonstrated by the collection of yield. The millets are isolated into two guideline classes of major and minor millets. Critical millets are pearl millet (Pennisetum glancum), foxtail millet (Setaria italica), proso millet (Panicum miliaceum), finger millet (Elusine coracana). Minor millets are kodo millet (Paspalum scrobiculatum), Farm millet (Echinochloa esculenta), little millet (Panicum miliare). Kodo millet (paspalum scrobuculatum) has been perceived as a minor millet crop. It is ordinarily called kodomillet, kodo, varagu rice and kodra. It begins in best Africa. It's everything except a hard gather and dry season receptive (P. Beauv.). it's everything except a yearly millet that adjustments of reach from 30-90cm or 4 feet and has a basal turner. It requires 25-27°C, following 4 months yield will be ready to assemble ensuing to harvesting period the grain occurs in the hard husk which makes debraining of grains problematic. The size of seed is little having 2mm long, 1.5mm width and concealing changes from pale natural shaded to diminish dim. (Ragee et.al., (2006). The kodo millet grain is made from various enhancements like it gives 11% protein, 37-38% dietary fiber, opposite to rice which gives 0.2/100g and 1.2/100g. an adequate proportion of - fiber helps with contradicting the impression of longing. The grains oblige 66.6g of starches which give 353kcal per 100g of grain diverged from other millet and fat 3.6g/100g. the grains contain high total minerals like (calcium 15.27mg, Phosphorus 188mg, iron 2.34mg, copper 0.26, magnesium 147mg, sodium 4.6mg, potassium 144mg, zinc0.7mg), supplements are thiamin 0.299mg, riboflavin0.20mg, niacin 1.49mgThe kodo millet is an oat crop which generally filled in Tamilnadu, Gujarat and Madhya Pradesh regions. It is dry season liberal yield. It requires 25-270C for ideal turn of events. The seeds contain principal enhancements and dietary strands in a higher total which are valuable for human handling. The seeds are eaten up as kodomillet rice, idli, noodles, treats, bread, dosa, weaning food sources, etc

As shown by Malleshi and Hadimani, 1994). The seeds of kodo millet unmistakable in concealing as per the kind of the grain (Ragee et al., 2006). The aleurone layer keeps up authentic improvement of the seed. The grain has key portions like microbe, wheat and endosperm. The outer covering of the seed is known as a wheat or husk which shapes a monstrous degree of the grain around 37% (The grain contains around 112 µmol ferulic acids

(Deshpande et al.,2015). The microorganism which is high in oil content is killed during handling to keep the flour from rancidity, and next is endosperm which is the rule a piece of the grain used during handling or changing over the part into flour. (Mohapatra et al,.2015). Due to the little size of the grain, the treatment of the grain is irksome in this way the whole grain is used for the thing plan

millet (paspalum scrabiculatum) is a minor millet has a spot with Poaceae family Kodo millet is generally divided in wet domains across the wildernesses and subtropics of the world. It is for the most part filled in Uttar Pradesh in the North Kerala, Tamil Nadu in South. This grain is generally called Varagu, kodo, haraka(Mall and Tripathi, 2016). Kodo millet is a nutritious grain as differentiation with wheat and rice. The protein, mineral substance, and fiber content is higher than rice (Ohariya, 2013).

As shown by (Shinoj et al.,2006). According to Chandel et al.,2014 thinks about the kodo millet contains 60-70% starch, 6-19% proteins, 1.5-5% fat substance, 10g dietary fibers (37-38%), and 2.6% of minerals the iron substance in kodo millet goes from 25.86ppm to 39.60ppm. Kodo millets have lesser proportion of phosphorus when stood out from various millets. Support and Chandra, 2005 referred to that the gelatinization temperature of kodo millet flour is 13°C. It has less impenetrable to gelatinization, and can be used for warming of cakes and bread, second powders, soup, porridge, and starches and changed flour for phenomenal food assortments. phytochemicals like phenolic, lignans, beta-glucan, inulin, safe starch, phytates, sterol, tocopherol and carotenoids are there in millet. The central polyphenolic parts are phenolic destructive and tannin while flavonoids are accessible in little sums. They go probably as a cell support and keep from oxidation reactions

In millets 60-70% dietary sugars are accessible. Sugar and starches the free sugars found in millets are glucose, fructose, sucrose, raffinose and their substance goes from 1-1.4% with sucrose (0.3-1.2) being the extraordinary sugar starch is an on a very basic level important rough materialin food assortments undertakings and medication, material, and paper adventures (Deshpande, Mohapatra, and Tripathi 2014-2015). The plan, physio-substance properties of millet starch has been unmistakable as difference with other oat grains (Tsao 2010). It is essentially isolated into two standard fragments i.e amylose and amylopectin having extent of 26:74 %, it expects huge part to offer development to the final product. Amylose has straight plan alpha 1-4 linkage while amylopectin is extended having alpha 1-4 linkage and alpha 1-6 linkage. It helps with procuring the real convenience, uses and development of starch. As shown by Bangoura et.al considers he talks about that the resistance starch content reducing during cooking anyway amylose content addition which give gel consistency to the starch. Starch is the essential section in all oats including Kodomillet, fingermillet, etc, it works on the last idea of the thing.

Millet contains by far most of the critical amino acids, like arginine, cystine, histidine, isoleucine, leucine, methionine, phenylalanine, sulfur, tryptophan, theronine, valine containing amino acids at the extent of leucine to isoleucine is around 2 (Ravindran, 1992; Antony et

al., 1996). As shown by the different examinations of L.Sudharshana and P.V.Monterio, the prolamin a piece of millet grain is 6.5 to 11.1mg per gram of whole grain flour (6.4 to 10.9% of outright proteins content). The 9 glutelin runs some place in the scope of 8.2 and 10.3mg/g of whole flour. The certified glutelin part is greatest protein part of kodo millet and compasses from 40.7-54.4 mg/g of whole flour (40.4-52.1% of full-scale protein). The major amino acids isoleucine, phenylalanine, tryptophan and valine, leucine is accessible more than 0.33mg. overflow leucine impede with the utilization of isoleucine. The leucine: lysine goes from 5.2-6 in kodo millet.The pointless amino acids, for instance, aspartic and glutamic acids proline and alanine are accessible in enormous aggregate The high extent of leucine, lysine achieves inefficient use of lysine restoratively safe allot of leucine: lysine should be under 4.6. Kodo millet has the most raised free radicals (DPPH) quenching development followed by unprecedented millet

Theoretical perspective of Millets

Millets are customary grains, created and eaten in the Indian subcontinent for in any occasion the past 5000 years. They are storm dealt with, intense grains which have low essentials of water and extravagance when appeared differently in relation to other notable oats. Millets can be separated into two general groupings: Stripped grains and Husked grains. "Uncovered grains" are the three standard millets (Ragi, Jowar and Bajra) which dont have a hard, undigestable husk. These millets dont ought to be ready after accumulate - they just ought to be cleaned and can be used. By virtue of this clarification, they are at this point notable in our nation and are extensively evolved (they are furthermore called critical millets considering this clarification). "Husked grains" are various millets, like Foxtail Millet (navane), Little Millet (saame) and Kodo Millet (haarka), which have an undigestable seed coat. This husk ought to be dispensed with before the grain is really great for human usage. This used to be done by turn in the many years past as was rice. Regardless, the robotization of the treatment of these minor millets didn't keep awake with rice and various oats so they in a little while got loathed. Millets are outstandingly nutritious, well off in fiber and sans gluten, simplifying them for the body to hold. They are affluent in a huge scope of micronutrients, including calcium, iron, phosphorus, etc They are moderate handling food assortments which don't cause the tremendous spike in glucose which is achieved by eating cleaned rice, thusly, millets help with hindering and controlling diabetes. for the enhancement making of millets when appeared differently in relation to wheat and rice. Millets should ideally be a vital piece of your step-by-step diet. They switch things up and harmony to your food. They can displace white rice in the total of your suppers. You can start by mixing millets into rice and steadily make one dinner every day a Millet feast. A couple of gathering enjoy found enormous benefits, especially in controlling weight and diabetes, by trading absolutely from a rice and wheat diet to a millet-based eating schedule. The green bombshell was an achievement drive to rehaul the provincial demonstrations of our country. It was dispatched in light of the various starvations during the 1950s and 1960s to make the country free concerning food creation. The took a "pack" approach - using creamer variety seeds which have better return, adding fertilizers to deal with the additional need of this yield, using pesticides and different added substances since these hybrid groupings had no shield against neighboring bugs and diseases and building dams, giving power, presenting borewells and various methods for guaranteeing the harvests have sufficient water. There picked two grains as the essential force of progress: Paddy Rice (Oryza Sativa) and wheat (Triticum aestivum). These two grains were made open to farmers and supported strongly to get more farmers to turn into these (The whole group was funded: fertilizers, pesticides, power, etc.) These drives worked commendably in making our country produce more food (we produce more than we use as of now), so well that farmers any place changed to creating rice and wheat as opposed to regular, strong oats like millets. Simply the most far away towns and factions saved to their traditional systems for creating millets and other strong harvests. Millets and the Climate With natural change on our points of view and precipitation getting progressively unconventional, millets are turning out to be maybe the primary grains for the whole world. Being precipitation dealt with yields, Millets put irrelevant load on our delicate, really over-trouble water systems. Creating millets doesn't need advancement of exorbitant and organically inconvenient dams and water framework systems. They can make due on soil where rice and wheat can't grow, even possibly saline and acidic soils, so they can foster well without fertilizers and other soil further developing fabricated materials. Also, millets are not powerless to annoys and shouldn't worry about showering of pesticides. Millets sustain food security since they are more opposed to crash and burn than other grain crops. Creating Millets are straightforward respects create and are known as the "Slow man's collect" because of how less effort is supposed to foster them. Believe it or not, various millets create as weeds in various harvests. You ought to just to impart the seeds in the farm and you will have an accumulate following 3 months. They just need 2-3 ideal rains and will yield a good procure. Most millets are created as Kharif crops, for instance they are planted close to the beginning of summer storms. In districts that get extraordinary precipitation, a critical number of the millets are created as a rabi crop for instance they are established in winter and assembled in spring. Why are millet nutritious grains when diverged from rice, etc? Grains which fill in unforgiving circumstances store a lot

of varied supplements in their seeds. This is perhaps a sign of formative squeezing factor - more prepared seeds will persevere and thrive and less coordinated species will evaporate. A comparable benefit is given to us too when we consume it. Nevertheless, nowadays, the rice and wheat which we eat are mutt varieties which have been decided for obvious turn of events and exceptional yield. Normally, they don't store a great deal of enhancements in their seeds. Thusly, plants which foster on a flourishing rich soil humming with micro activity will get a changed eating routine to foster on when appeared differently in relation to the plants which foster through hydroponics or soils profited from a steady progression of homogenous fertilizers. This kind of mono-diet for our plants and thusly, our eating routine, prompts ailments like supplement need and mineral deficiency.

Whole grain millets versus cleaned millets One requirements to recollect a critical piece of cereal grains - essentially all of the mineral and unsaturated fats and a nice degree of the fiber content is found in the wheat layer. So one necessities to guarantee that the thing you buy is unpolished, whole grain, millet rice, and has persevered through immaterial wheat disaster. Cleaning millets dispenses with the wheat layer inciting huge loss of enhancements. Nonetheless, it makes the general planning more straightforward and thinks about greater degree dealing with. "Quinoa" - What's all the battle? Quinoa (enunciated 'sharp wah') is a pseudo-grain immovably related to our own Dantina Soppu (Amaranthus). Quinoa has been for the most part filled in the high nations of South America as a food crop past 3000 - 4000 years. It got the extreme of the US public, who are reliably looking out for new "superfoods" - which they think will handle all of the issues with their eating schedule. Genuinely, we don't need to look so outstandingly far as the Southern Andes to find an especially nutritious grain. Quinoa, like millets, has progressed in awful circumstances with horrendous soil and its dietary profile is basically indistinguishable from enormous quantities of the minor millets (especially foxtail, ranch millets). Why get grains from so far when we have a superfood in our own yard! How might I cook with millets Cooking with Millets is straightforward and takes around comparative time as cooking with various oats. Could it be smart for me to soak millets preceding cooking? It is attractive over douse the rice or brokens of millets for 2 to 6 hours before cooking. This is valuable in further developing the probiotic qualities of the food. In case one can't presoak the rice or corn dinner before preparing, then there will some diminish in the probiotic attributes, it isn't a tiny smidgen hazardous or has debilitated effects of people consuming. Exactly when you soak, you want to use less water and moreover cook for insignificant less time. Where do I buy millets? On the off chance that you're in Bangalore, you're in karma. You present your solicitation online at Kaulige.com and get it passed on to you or a store near you. Actually, look at this association for nuances of our stores. In the event that not, look for millets in that frame of mind to you. Regular Stores will undoubtedly have millets anyway a steadily expanding number of standard stores have started keeping millets.

Sorts of Millet

In our ongoing reality where prosperity and wellbeing have turned into a unique lifestyle, food organized food things like Millets and various oats are procuring reputation. Every dietician and nutritionist are vouching for the imperative benefits that Millets have on human prosperity. Besides being sans gluten, they can overhaul your prosperity and advance weight decrease. If you are someone who likes to eat rice and wheat in your meals reliably, it might assist with organizing normal millets into your eating routine in more than one way. Nevertheless, various individuals don't have even the remotest clue about the various types of millets to investigate, similarly as their enhancement worth and calories. Millets are extraordinarily factor minimal developed grasses, commonly planted as oat crops/grains across the world. Millet can be white, green, yellow, or red and is minimal in size and round in structure. These are high the extent to which their restorative substance. Concerning proteins, minerals, and supplements, each Millet is three to various times invigoratingly better contrasted with rice and wheat. Millets are copious in B supplements, calcium, iron, potassium, magnesium, zinc, and without gluten. They have a low GI, so millets are great for wheat hypersensitivities/fanaticism in individuals. Weight decrease millets are moreover suitable for diabetics.

Different Sorts of Millets

1. Finger Millet (Ragi)

Finger Millet is broadly known as Ragi. It is routinely gobbled up by health fans as a superior decision to rice or possibly wheat. It's everything except a sans gluten variety of Millet, well off in proteins and amino acids. In creating kids, finger millet is proposed to work with mind improvement. It is moreover high in calcium and has strong assemblies of iron and various minerals too. Ragi furthermore has a fair number of major amino acids essential for the human body in the cell support activity of standard Indian food sources.

2. Foxtail Millet (Kakum/Kangni)

Foxtail Millet, generally called Kakum/Kangni in India, is regularly available in Semolina or rice flour. It is affluent in carbs that help with changing glucose levels in the body. These millets have a high Iron substance. Foxtail Millet can work on in everyday obstruction.

3. Sorghum Millet (Jowar)

This is another notable sort of Millet in India to make Rotis and other bread. It is secretly known as Jowar. Normal jowar is a rich wellspring of iron, protein, and fiber and,

considering the presence of policosanols, can assist with bringing down cholesterol levels. People with wheat responsive qualities can have Jowar as a superior other choice. Jowar furthermore has a more prominent number of cell fortifications than blueberries and pomegranates and is well off in calories and macronutrients. Sorghum helps increase absorption.

4. Pearl Millet (Bajra)

Pearl millet or Bajra is maybe the most broadly perceived sorts of millets that you presumably tasted. It is set up in an unexpected way, including roti and khichdi, with colossal clinical benefits. Bajra consolidates iron, fiber, protein, and minerals like magnesium and calcium. It might be great for your flourishing to practice typical pearl millet confirmation, for instance, helping you with doing battling type II diabetes.

5. Buckwheat Millet (Kuttu)

Buckwheat, generally called Kuttu in India, is maybe the most notable sorts of Millet and is habitually used during the Navratra fasting time. It is diabetic-obliging and helps in decreasing circulatory strain. It is helpful for OK cardiovascular prosperity, and if you want to shed pounds, it should be integrated into your eating schedule. Buckwheat also guarantees against illness of the chest, asthma in children, and gallstones.

6. Amaranth Millet (Rajgira/Ramdana/Chola)

You almost certainly found out about the incredible benefits of Amarnath Oats. In any case, do you understand that Amarnath, generally called Rajgira, Ramdana, and Chola, is a kind of Millet? This Millet is affluent in protein and dietary fiber. It is staggering for a sound eating routine. This Millet furthermore helps in engaging becoming dim and going bald. Amaranth similarly cuts down cholesterol levels and cardiovascular affliction risk. Calcium, supplements, and various minerals are high in it.

7. Little Millet (Moraiyo/Kutki/Shavan/Sama)

Little Millet is furthermore called Moraiyo, Kutki, Shavan, and Sama. It is stacked with supplement B and principal minerals like Calcium, Iron, Zinc, and Potassium. Little Millet is generally used in Southern regions of India in different standard dishes. It's everything except a superior decision to rice and doesn't cause weight procure.

8. Ranch Millet

Ranch Millet is generally called Sanwa. It is stacked with high proportions of dietary fibers that assist with further developing poo and supporting weight decrease. It is well off in calcium and phosphorus, which can strengthen bone thickness.

9. Broomcorn Millet

Broadly known as Chena in India, Broomcorn helps balance with blooding sugar levels as it's everything except a low glycemic document. It's everything except a respectable decision for diabetics to be merged into a step-by-step diet. Changing to an eating routine with Millet can be a good change in light of everything. One can look for Millets on the web and get a hand on the normal decisions open from different brands.

10. Kodo Millet

Kodo Millet, generally called Kodon Millet, is an eatable variety with higher proportions of lecithin amino destructive. It's everything except a basic effect on strengthening the tangible framework. Kodo is an amazing wellspring of B supplements, especially niacin, B6, and folic destructive, among various supplements and minerals. Being a without gluten millet, it is uncommon for gluten-intolerant individuals. It can soothe cardiovascular issues, for instance, hypertension and cholesterol levels when eaten reliably by postmenopausal women.

Millets as a sound substitute to wheat and refined flour

While there is no denying how shrewd eating less junk food is the way in to a good life, concerning practicing it genuinely, not by and large do we section effectively. That is because there are such incalculable temptations - terrible sustenance and burned treats that taste superb - that brilliant eating less junk food goes straightforwardly through of the window. Then there's this fundamental knowledge that brilliant slimming down anticipates that one should put resources into a lot of energy. As a matter of fact everything's connected to making the right food choices. You ought to know about what you eat and such trimmings you buy to follow the strong way. While it could all show up unnecessarily, it's really not for any reason problematic when you get down to making it happen.

One of the underlying advances that you can take towards great consuming less calories is to deny refined flour, and even while using whole wheat flour, give it a nutritious lift by adding other strong flours to it. Pondering what all to integrate? We have recorded down five power stuffed flours you can add to your consistently diet While ragi is a routinely open fixing in South India, particularly Karnataka, not by and large does it come to step by step swear off food of people. In case the dish ragi mudde has spurned you previously, you ought to understand that there are actually part other delicious ways to deal with use ragi. Being a phenomenal wellspring of calcium and iron is advanced. You can use it to make hotcakes, crepes, cakes, rotis, etc Jowar is an ideal gluten free choice rather than wheat flour. It's obtained from Sorghum, which is a kind of millet. It's an unbelievable wellspring of fiber, protein and crucial supplements. Make rotis with 100 percent jowar is shaky, yet you can mix it in with your typical flour or use it to make hotcakes, etc In West India, bajra rotis are consistently used. They are filling, as they

contain a remarkable wellspring of fiber. Nevertheless, when polished off with white spread, it's everything except a fantastic reinforcement with curries and meat dishes. Buckwheat or kuttu appears watching out, particularly during Navratri when it against the law against the law to eat grains. It's a remarkable wellspring of protein, and can be used to make pooris, parathas, etc. Amaranth flour doesn't contain risky gluten tracked down in wheat, rye and grain. It's everything except a fair wellspring of calcium, protein, iron, magnesium and supplements A, B and C. In all honesty amaranth or rajgira is the single grain which contains L-ascorbic acid. You can use it to thicken soups and sauces isolated from making chapattis. It can similarly be used with other gluten free flours for getting ready.

CONCLUSION

All in all, millet the travel industry presents a novel and diverse chance to praise the social, culinary, wholesome, and biological meaning of this old grain. As a staple food in numerous districts, millet offers a rich embroidery of encounters for travelers while supporting nearby networks and economical farming practices. The discoveries and proposals talked about in this setting highlight the capability of millet the travel industry and its boundless advantages. Millet the travel industry not just gives a stage to saving social customs and advancing the healthy benefit of millet yet additionally adds to the preservation of biodiversity and eco-accommodating farming practices. Through the different exhibit of encounters, for example, millet tasting visits, agro-the travel industry, social inundation, wellbeing and health withdraws, eco-the travel industry, workmanship and specialty studios, and verifiable and instructive visits, millet the travel industry can take care of many interests and inclinations. The progress of millet the travel industry lies as a team with neighborhood networks, customization of encounters, viable promoting, manageability rehearses, and persistent improvement in view of vacationer criticism. It's likewise fundamental to consolidate instructive and social components to make a more profound association among vacationers and the millet customs. As millet the travel industry proceeds to develop and advance, it can possibly offer vacationers paramount and significant encounters as well as advance the preservation of this old grain's social legacy and its place in maintainable horticulture. In general, millet the travel industry fills in as a fantastic illustration of how food, culture, and manageability can meet up to give improving and instructive travel encounters.

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Planning for Geotourism through Geospatial Analysis: A Study of Lahaul & Spiti, Himachal Pradesh

Mr. Sandeep Bhandari, Dr. Rajan Bhandari & Prof. Prashant Gautam

Abstract

Geotourism, a niche form of tourism focusing on geological features, presents a unique opportunity for sustainable development and conservation of geological heritage. This paper explores the geotourism potential of Lahaul & Spiti, Himachal Pradesh, India, a region rich in geological diversity yet largely overlooked in terms of geotourism development. Through a comprehensive inventory of geosites including lakes, waterfalls, glaciers, mountain passes, monasteries, fossil sites, and national parks, this study highlights the region's geological treasures. However, challenges such as remote accessibility, limited infrastructure, and the need for cultural preservation pose hurdles to geotourism development. The study advocates for collaborative engagement among stakeholders, the implementation of sustainable development frameworks, active participation of local communities, and substantial investments in infrastructure and educational endeavors. By addressing these challenges, Lahaul & Spiti can unlock its geotourism potential while safeguarding its natural and cultural heritage.

Keywords: *Geotourism, Geoheritages, Geosites, Lahaul & Spiti*

Introduction :

In recent years, there has been a surge in the popularity of various forms of tourism on a global scale. Among these, geotourism has emerged as a distinctive niche, centering its focus primarily on geological features and sites of notable significance. Geotourism, categorized as a specific form of nature-based tourism, champions the cause of preserving geographical diversity (Bhat et al., 2023). This unique form of travel is characterized by a deep appreciation for the Earth's history, as tourists engage in visits to attractions renowned for their geological significance (Cai et al., 2023).

As an emerging market within the tourism industry, geotourism highlights not only the geological aspects but also encompasses the broader spectrum of topographical, geomorphological, and environmental characteristics. Its core mission revolves around the preservation of significant geological sites, recognizing their intrinsic value to the natural landscape (Stokes et al., 2003; Henriques et al., 2011).

Geotourism, a multifaceted approach to tourism, nurtures an appreciation for geological diversity while facilitating education in Earth sciences. This involves a spectrum of activities, including independent exploration of geological features, following designated geo-trails, participating in guided tours, engaging in geo-related activities, and visiting specialized geosite visitor centers. Hose (2012) further refines the concept, defining geotourism as the provision of interpretative and service facilities for geosites and geomorphosites, alongside their associated in-situ and ex-situ artifacts. This comprehensive definition underscores the role of geotourism in building constituencies for the conservation of geological heritage through appreciation, learning, and research. Geotourism intersects with other forms of tourism, such as cultural, heritage, eco-tourism, and adventure tourism, contributing to the preservation of geo-diversity and enhancing understanding of Earth sciences (Newsome and Dowling, 2010; Dowling, 2013). Consequently, geotourism plays a pivotal role in preserving unique geological features and raising awareness of their value, ultimately leading to their enhancement.

Over recent decades, there has been a notable expansion in the scope of geotourism worldwide, with various stakeholders increasingly interested in enhancing conservation efforts and safeguarding geological heritage (Newsome and Dowling, 2010). The geological and cultural heritage of a region has become a key attraction for

Mr. Sandeep Bhandari *Research Scholar Department of Geography, Punjab University, Chandigarh*
Dr. Rajan Bhandari *Assistant professor, Department of Geography, D.A.V. College, Chandigarh*
Prof. Prashant Gautam *Professor, UIHTM, Panjab University, Chandigarh*

tourists, offering opportunities to deepen understanding of the geology and geomorphology of landscapes (Singh and Anand, 2013). Despite historical challenges posed by urbanization and degradation of significant sites, there has been a growing awareness for the conservation of geological features since the middle of the twentieth century (Page and Wimbledon, 2009). Developed countries have made concerted efforts to identify and document significant geological sites, contributing to the broader concepts of geoheritage and geoconservation (Panizza and Piacente, 1993; Wimbledon et al., 1995; Wimbledon, 1996; Panizza, 2001; Reynard, 2004). These concepts are essential for safeguarding the Earth's natural heritage, encompassing a range of landforms, rock exposures, and sites crucial for understanding geological history (Brocx and Semeniuk, 2007).

The Indian subcontinent stands as a testament to a rich tapestry of cultural heritage, a storied historical background, and prominent geological features (Ahluwalia, 2006). It boasts a distinctive geodiversity, encompassing Precambrian formations in central and southern India, Gondwana basins, rift basins, and the Himalayan orogenic belts, offering significant potential for establishing geoparks (Chauhan et al., 2016). India's landscape showcases a myriad of geological features spanning from the Precambrian era to the present, including unique geomorphology, rock formations, fossils, tectonic processes, and mineral deposits (Chauhan et al., 2021; Wadhawan, 2021). However, despite its geological wealth, India lags in systematic establishment of geological heritage, protection of geosites, development of geoparks, promotion of geotourism, and implementation of geo-conservation concepts, underscoring the need for identifying and assessing geological heritage sites.

India's diverse landforms and landscapes include iconic features such as the towering Himalayas, the arid Thar Desert, the cold desert of Ladakh, and glacial landforms like the Nubra Valley and Lahul Spiti Valley. Additionally, the subcontinent boasts expansive riverine plains like the Ganga Plains, volcanic regions such as the Deccan Traps, and dramatic escarpments like the Western Ghats. Picturesque lakes and lagoons dot the landscape, alongside vast saline marshlands like the Rann of Kachchh and widespread granite formations exemplified by sites like Hampi in Karnataka (Kale, 2014). India's vast geodiversity gives rise to numerous geosites deserving recognition as heritage or monumental sites, yet many remain overlooked. Safeguarding and highlighting these sites as geotourism destinations is imperative for leveraging India's geological heritage to its fullest potential.

The Geological Survey of India (GSI), established in 1851 under the Ministry of Mines, plays a crucial role in collecting information related to Earth sciences and surveying. GSI has been entrusted with the responsibility of protecting and promoting India's physical attributes, designating various sites across the country as "National Geological Monuments (NGMs)" (GSI, 2017). These NGMs hold national importance and heritage value, serving as focal points for maintaining, protecting, promoting, and enhancing geotourism. Despite the designation of 34 geoheritage sites and 12 geotourism sites by the GSI, it's notable that not a single geosite from Lahaul & Spiti has been included in this list, suggesting the need for broader recognition and conservation efforts in this region.

Lahaul & Spiti, nestled in the Indian Himalayas, boasts remarkable geological sites crucial for understanding the region's geological evolution. Yet, despite its geological significance, this region remains largely overlooked in terms of geotourism development. As a region endowed with rich cultural history and natural beauty, Lahaul & Spiti has the potential to emerge as a sustainable tourism destination, offering opportunities for local communities to benefit from geotourism initiatives . This paper aims to address this gap by inventorying geosites in Lahaul & Spiti and assessing their potential for geotourism development.

By showcasing the unique geological heritage of Lahaul & Spiti, this study seeks to underscore the region's potential as a geotourism destination and advocate for its conservation and promotion on both national and international platforms. Through a systematic inventory of geosites, this research endeavors to contribute to the broader discourse on geotourism development and sustainable heritage management.

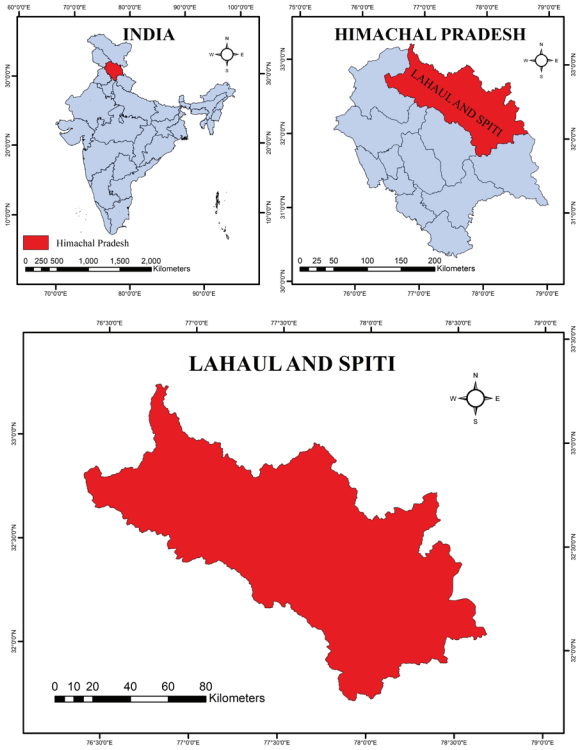
Study Area

Lahaul and Spiti, the largest district of Himachal Pradesh, was established as a district in 1960. Prior to that, it was a tehsil under the Kullu sub-division in the former state of Punjab (District Gazetteer, 1971). The Lahaul and Spiti district lies within the geographical coordinates of 31°44'57'' to 32°59'57'' north latitude and 76°46'29'' to 78°41'34'' east longitude. Covering an area of 13,841 square kilometers, it constitutes approximately 24.85% of Himachal Pradesh's total land area. Kunzam Pass, standing at an altitude of 4,520 meters, serves as the connecting link between the two valleys of Lahaul and Spiti, while Rohtang Pass provides access to Lahaul. Positioned in the northern and northeastern region of Himachal Pradesh, the district shares borders with Tibet to the east and Ladakh to the north. To the west and south, it is bordered by Chamba, Kangra, and Kullu districts, and to the southeast by Kinnaur district.

The study area holds significant geotourism potential due to its stunning landscapes, rich cultural heritage, and unique geological features. However, the construction of Atal Tunnel introduces both opportunities and challenges for the area. While, the tunnel enhances accessibility and connectivity, potentially attracting more tourists, it also raises concern about environmental impact, cultural preservation and sustainable tourism development.

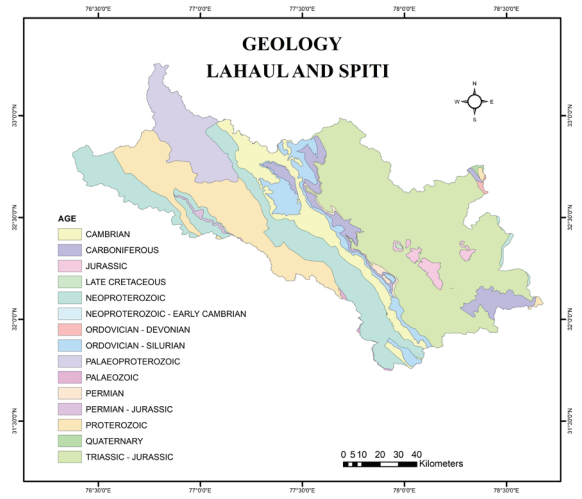
Balancing the benefits of improved connectivity with the need for responsible tourism practices and conservation efforts will be crucial for maximising geo-tourism opportunities while mitigating adverse effects on the region's natural and cultural assets.

MAP OF STUDY AREA



Source: *Survey of India*

Geology of Lahaul & Spiti:



Source: *Geological survey of India (GSI), 2019.*

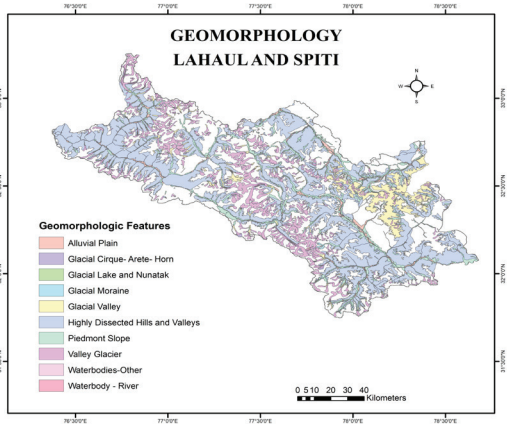
The geological formations within the Lahaul & Spiti District of the Northern Himalayan Region encompass a diverse array of rock types and geological periods. Situated in the Tethyan Himalaya, the district's geological complexity is attributed to a wide range of rock complexes and minerals, along with faults exerting structural control over drainage networks throughout the area (Krishnanand, 2016). Notably, the Muth quartzite, characterized by its snow-white appearance, serves as a significant stratigraphic marker for the Devonian period in certain areas of Lahaul and Spiti, as well as Ladakh. Furthermore, the Lahaul valley features exposed black splintery shales, yielding coral specimens of probable Devonian age between Sissu and Tandi (Gupta et al., 1973).

In terms of the Middle Carboniferous period, the area is abundant in black carbonaceous shales containing fossils such as bryozoans and brachiopods, with the Tabo stage representing the lowest unit. Permian rocks, particularly the Sarchu limestone, sandstones, and grey shales, hold significance, with notable fossil-rich exposures near Sarchu bridge and certain parts of Spiti. The Triassic succession within the Spiti Valley, part of the Lilang system, is predominantly characterized by fossiliferous limestones interbedded with shales and quartzites, notably transitioning into the Jurassic System with the Kioto limestone (Krishnanand, 2016).

Distinctive geological formations such as the Spiti Shales, marked by black sandy shales rich in fossils, extend from the uppermost Jurassic to the lowermost Cretaceous periods, with notable exposures near villages such as Gete, Kibber, and Rangrik. Cretaceous rocks are primarily found in the Chikkim peak and Giumal Sandstone, with occurrences of fluvio-glacial deposits observed in certain areas of Spiti (Krishnanand, 2016).

The Spiti formation is characterized by pyritiferous black shales, while the Giumal formation consists of siliceous sandstone and shale. Quaternary deposits display variable distribution across river valleys and glacial regions (Central Ground Water Board, 2022).

Geomorphology of Lahaul & Spiti:



Source: *Geological survey of India (GSI), 2019.*

This region exhibits a complex landscape characterized by youthful mountains, deep valleys, and lofty hills. The underlying rock formations are ancient, contributing to the division of the area into structural hills and valley fills. The hills feature steep slopes adorned with cliffs and ridges, while the valleys encompass a mix of river deposits and glacial debris. River valleys situated at lower elevations host some vegetation, whereas those influenced by glacial activity at higher altitudes are broader, flatter, and devoid of vegetation. Glaciers are prevalent in the central and northern regions, serving as sources for river systems. Soil quality varies across the region, with thin layers observed in some areas, yet fertility is attainable due to the decomposition of plants and the presence of minerals derived from mountain rocks (Central Ground Water Board, 2013).

Objectives of the study

This study aims to create a comprehensive inventory of potential geoheritages/geosites in Lahaul & Spiti, HP, laying the groundwork for geotourism development. Additionally, this study seeks to identify challenges and provide strategic recommendations to enhance geotourism initiatives in the region. Through this endeavor, this study aims to promote sustainable tourism and deepen appreciation for Lahaul & Spiti's geological treasures.

Methodology

The methodology for this study involved gathering data from a diverse range of sources, including both online and offline resources. Geoheritages and geosites were identified through an extensive review of existing literature, analysis of toposheets, and examination of imagery from Google Earth Pro. To enhance precision and accuracy, ArcGIS 10.8 was employed to create detailed shapefiles and maps of these potential sites, providing a visual representation of their spatial distribution and characteristics. This comprehensive approach ensured the thorough exploration and documentation of geological features, enriching our understanding of the region's geoheritage and facilitating informed decision-making for conservation and management efforts.

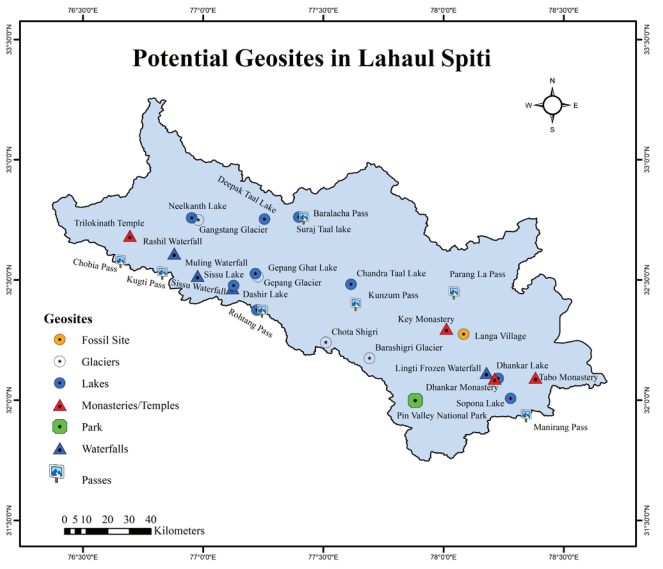
Potential Geosites in Lahaul & Spiti

Geosites, defined as areas of geological and scientific significance, play a crucial role in understanding Earth's history and processes. These sites, ranging from a few square meters to several square kilometers, are distinguished by their exceptional geological attributes, including mineral composition, structural features, and geomorphology (El Wartiti et al., 2008). Identifying geosites of significance involves evaluating specific criteria such as uniqueness, rarity, and representativeness of geological features (Predrag and Mirela, 2010; Brocx and Semeniuk, 2011). These criteria ensure the selection of sites worthy of preservation and study.

Despite its rich geodiversity, Lahaul & Spiti District is yet to receive recognition for its numerous geosites. The region, blessed with a plethora of unique geological formations, remains largely ignored in terms of heritage or monumental status designation. While the Geological Survey of India has identified and notified 34 geoheritage and 12 geotourism sites across the country, Lahaul & Spiti has not found representation on this esteemed list (National Geological Monuments of India, 2024). This oversight underscores the urgent need to protect and promote the district's geosites as potential geotourism destinations.

Lahaul & Spiti offers vast opportunities for tourism, spanning various sectors including ecotourism, tribal tourism, and archaeological tourism. The region boasts numerous natural and historical sites of geological significance, such as natural parks, caves, waterfalls, springs, glaciers, and mountain passes (Bhargava et al., 2010). Situated in a high-altitude terrain surrounded by enchanting mountain passes, Lahaul & Spiti presents visitors with mesmerizing geomorphological marvels waiting to be explored. Harnessing the potential of these geosites for geotourism can not only boost the local economy but also raise awareness about the importance of geological heritage conservation.

Potential Geosites in Lahaul & Spiti



Source: *SOI Toposheets, Google Earth Pro.*

1. Lakes

Lakes in Lahaul & Spiti are vital geological sites for geotourism due to their diverse geological settings, glacial origins, sedimentary records revealing environmental history, and support for unique biodiversity. They also hold cultural significance, enriching the visitor experience with insights into local traditions and beliefs.

Lakes	Descriptions
Chandra Tal (Moon Lake)	Chandra Tal, nestled at an altitude of approximately 4,300 meters (14,100 ft), captivates with its crescent shape and ethereal beauty, particularly enchanting under the moonlit sky. Renowned for trekking and camping, it stands as a cherished destination, inviting adventurers to immerse themselves in its serene and otherworldly allure.
Suraj Tal (Lake of the Sun God)	Suraj Tal, nestled at an elevation of 4,890 meters (16,040 ft), stands as India's third-highest lake. Revered as the source of the Bhaga River, it holds sacred significance and serves as a favored rest stop for travelers traversing the Baralacha La Pass. Its pristine beauty and spiritual aura make it a cherished destination amidst the rugged landscapes of the Himalayas.
Deepak Tal	Deepak Ta, nestled along the Chandra Tal trek, enchants visitors with its petite, heart-shaped form. Adorned by vibrant meadows teeming with wildflowers during the summer months, it offers a serene sanctuary for travelers seeking solace amidst nature's splendor.
Dhankar Lake	Situated close to the Dhankar Monastery, the biggest and oldest in Lahaul, this beautiful lake makes the monastery visit even more delightful, providing a lovely view amidst the mountains.
Neelkanth Lake	This lake, shaped like a pear, is close to Kibber village and is well-known for its breathtaking beauty. The bright blue water and snowy mountains around the lake make it look like a scene straight out of a picture postcard.
Sissu Lake	Close to Sissu village, this little lake is a favorite place for picnics and admiring the beautiful views around it.
Sopona Lake	This lesser-known lake is a hidden treasure, providing breathtaking views of the mountains that encircle it.
Dashir Lake	Dashir Lake, a lesser-known spot away from the usual tourist paths, is famous for its incredibly clear waters. When you look into the lake, you can see all the way to the bottom and enjoy the beautiful views all around.

Source: *SOI Toposheets, Google Earth Pro*

2. Waterfalls:

Waterfalls in Lahaul and Spiti are geologically significant as they showcase the region's diverse rock formations and erosion processes. Serving as important geological and geoheritage sites, they offer insights into the area's geological history and contribute to its cultural and natural heritage. With their scenic beauty and educational value, waterfalls have the potential to attract geotourists interested in experiencing these geological wonders firsthand.

Waterfalls	Descriptions
Sissu Waterfall	Also known as Palam Dhara, this waterfall near Sissu village in Lahaul Valley is formed as the Chandra River cuts through the mountains. Its accessibility has increased with the opening of the Atal Tunnel, attracting tourists keen to admire its scenic beauty year-round.
Lingti Frozen Waterfall	The Lingti Frozen Waterfall, situated in the Spiti Valley of Himachal Pradesh, India, stands as a remarkable natural marvel. Renowned for its splendor, especially during the winter season when sub-zero temperatures cause the waterfall to freeze entirely, it captivates visitors from various regions. Originating from the Kunzum Pass area, the Lingti River traverses the rugged Spiti Valley terrain, sculpting this awe-inspiring ice formation as it cascades down the rocky cliffs.
Rashil Waterfall	Rashil Waterfall, nestled in the Pattan Valley of the Lahaul region, Himachal Pradesh, India, stands as a hidden treasure. While it may not boast the same renown as other waterfalls, its charm is steadily growing, aided by the increased accessibility of Lahaul year-round, courtesy of the Atal Tunnel. Additionally, the presence of sulfur springs in the vicinity adds another intriguing dimension to this picturesque locale.
Muling Waterfall	The Muling Waterfall, situated in the high-altitude Lahaul Valley of Himachal Pradesh, India, is a hidden gem waiting to be discovered. Found near Gondhla village along the Manali-Leh Highway, it offers a stunning spectacle for travelers passing through the region. Fed by the Muling Nullah, a stream originating from the nearby mountains, the waterfall enchants visitors with its cascading waters, particularly during the summer months when snowmelt enriches its flow.Top of Form

Source: *SOI Toposheets, Google Earth pro*

3. Glaciers

Glaciers hold profound geological significance as agents of landscape transformation, sculpting terrain through erosive processes and sediment deposition over extensive temporal scales. Within Lahaul-Spiti, these glaciers emerge as pivotal geological landmarks, embodying geoheritage sites owing to their distinctive formations and preservation of geological chronicles. Noteworthy glacial valleys such as Chandra and Bara Shigri Glacier emerge as promising geotourism locales, presenting avenues for adventure tourism and facilitating scientific inquiry into glacial dynamics.

Glaciers	Descriptions
Bara Shigri Glacier	Bara Shigri, the largest glacier in Himachal Pradesh, spans over 27 kilometers (17 miles) and covers an expansive area exceeding 126 square kilometers (49 square miles). Serving as the primary source of the Chandra River, which later converges with the Bhaga River to form the Chenab River, its name, "Bara Shigri," translates to "Big Glacier" in the local dialect. Beyond its geological significance, Bara Shigri has attracted mountaineers and explorers for recreational and geographical pursuits. Notably, the glacier garnered attention for its valuable antimony deposits, prompting surveys by H. Walker and E.H. Pascoe of the Geological Survey of India in 1906. Situated within a transitional climatic zone, Bara Shigri straddles the boundaries of various climatic zones, ranging from cold and semi-arid to temperate and sub-alpine, as delineated by Rawat et al. (2009).
Chhota Shigri Glacier	Located on the northern slopes of the Pir Panjal Range, Chhota Shigri, meaning "Little Glacier," serves as a favored destination for skiing and other winter sports enthusiasts. Though smaller in scale compared to Bara Shigri, its scenic beauty and accessibility make it a sought-after spot for outdoor recreation in the region.
Gangstang Glacier	The Gangstang Glacier, positioned at the western border of the Lahaul region at an altitude of approximately 5,480 meters, flows into Shahsha nullah, ultimately merging with the Chandrabhaga River approximately 13 kilometers to the south.
Gepang Gath Glacier	The Gepang Gath Glacier, nestled in the Gepang Gath Valley of Lahaul, may not be as renowned as other glaciers in the area. However, it remains a valuable contributor to the region's water resources.

Sources: *SOI Toposheets, Google Earth Pro, Glaciers | District Lahaul and Spiti, Government of Himachal Pradesh | India (hplahaulspiti.nic.in)*

4. Passes

Mountain passes are geologically significant because they often mark areas where tectonic forces have created gaps in the landscape, revealing underlying geological formations. These passes can showcase various rock types, fault lines, and other geological features, providing valuable insights into the region's geological history.

In Lahaul and Spiti, mountain passes like Rohtang Pass and Kunzum Pass are not only important geological sites but also potential geotourism destinations. They offer stunning views of the surrounding mountains and valleys, and their geological features attract geotourists interested in learning about the region's unique geological heritage. Additionally, these passes serve as gateways to remote areas with diverse landscapes, making them ideal starting points for geological explorations and eco-adventures.

Some important passes are:

Passes	Description
Kunzum Pass (4,551 m)	This marks the entrance to Spiti Valley from Lahaul, presenting a picturesque journey with stunning vistas of the Himalayas and the Chandra River valley. Accessible typically from June through mid-October, the Kunzum Pass's availability hinges on weather patterns.
Rohtang Pass (3,978 m)	This mountain pass links the Kullu Valley to Lahaul and is a favored destination among tourists for its breathtaking views of nearby mountains and glaciers. The Rohtang Pass is typically accessible from May to November, yet its availability can be influenced by weather conditions.
Baralacha La Pass (4,890 m)	This pass serves as a vital link between Lahaul and the Zanskar Valley in Ladakh, known for its rugged terrain and picturesque landscapes. Baralacha La is usually accessible for travel from July to September, offering adventurers a chance to experience its beauty and challenges.
Kugti Pass (5,040 m)	Kugti Pass connects Lahaul Valley to Pangi Valley in Himachal Pradesh, India. Its challenging trek offers breathtaking views of snow-capped peaks and lush meadows, attracting adventurers and nature enthusiasts alike.
Parang La Pass (5,580 m)	This elevated pass lies along the Indo-Tibetan Border Police patrol route, presenting one of the toughest challenges in the area due to its severe weather conditions and rugged landscape. Parang La is open for a brief window during the summer months, offering a glimpse into its formidable terrain and harsh climate.
Manirang Pass (5550m)	The Manirang Pass links the Spiti Valley with the Ropa Valley of Kinnaur, characterized by its high altitude. On the Ropa Valley side, there's a five-kilometer snow-bed, while the Spiti side features about a three-kilometer snow-bed. Accessing the pass from the Spiti side, via the village of Mane, involves a gradual ascent. Conversely, descending towards the Ropa Valley side entails navigating a steep path through a narrow gorge.
Chobia Pass (4,980m)	Chobia Pass is a mountain pass located in the Pir Panjal Range of the Himalayas in Himachal Pradesh, India. It connects the Chamba Valley with the Lahaul Valley. The pass is known for its scenic beauty and challenging trekking routes, offering panoramic views of snow-capped peaks and picturesque landscapes.

Source : SOI Toposheets, Google Earth Pro, Passes | District Lahaul and Spiti, Government of Himachal Pradesh | India (hplahaulspiti.nic.in)

5. Built-up Geoheritages

Built-up geoheritages are features or sites of geological significance that have been incorporated into human-made structures or landscapes. These can include things like buildings constructed with unique geological materials, or even geological features integrated into architectural designs. They represent a merging of human creativity and geological history, often serving as educational or cultural landmarks that highlight the importance of geology in shaping our environment and societies.

Ancient monasteries,temples and structures contribute to the built-up geoheritages of Lahaul and Spiti. These religious structures, often constructed using locally sourced materials and traditional building techniques, form part of the cultural and architectural heritage of the region. They represent human interactions with the geological landscape, as their construction may have been influenced by the availability of geological resources such as stone and clay. From a geotourism perspective, monasteries and temples offer opportunities for visitors to explore the geological and cultural landscapes of Lahaul and Spiti. Some important monasteries of Lahaul & Spiti:

5.1 Key Monastery:

Key Monastery, established between 1008 and 1064 AD by Dromptom, a student of the renowned 11th-century teacher Atisha, is situated in Kee village atop a hill at an altitude of 4166 meters above sea level. It serves as the primary religious training center for Lamas in Spiti. Due to its strategic location, the monastery became a target for plunder by invading armies. The varied construction methods and architectural elements indicate that the complex has undergone numerous renovations and expansions over the years (Sharma and Sharma, 1997; Chaskar et al., 2023).

5.2 Tabo Monastery:

Tabo Monastery, situated at an altitude of 3050 meters in Tabo village, is renowned as the most esteemed and celebrated monastery in Spiti Valley. Often referred to as the "Himalayan Ajanta," it was constructed in 996 AD under the patronage of King Lah Lama Yeshe of the Guge Kingdom by the revered translator Lotsawa Rinchen Zangpo. This monastery played a pivotal role in the dissemination and proliferation of Buddhism in the western Himalayas and western Tibet (Klimburg-Slater and Luczanits, 1997; Verma, 2016).

5.3 Dhankar Monastery:

Dhankhar Monastery, also referred to as Tashi Choeling Gompa, stands as one of the most picturesque monasteries in Spiti, situated atop a rocky perch overlooking the confluence of the Spiti and Pin rivers. Positioned at an elevation of 3894 meters in Dhankhar hamlet, the former capital of Spiti, its unique setting has captivated the interest of visitors from various backgrounds (Chaskar et al., 2023).

5.4 Trilokinath Temple:

Trilokinath is a revered temple, exemplifies the harmonious coexistence of Hinduism and Buddhism in Lahaul. It's home to several monasteries that house ancient murals, thangkas, wood carvings, and massive statues of Guru Padmasambhava, the missionary who introduced Buddhism to Lahaul, Spiti, and Tibet (Trilokinath Temple | District Lahaul and Spiti, Government of Himachal Pradesh | India (hplahaulspiti.nic.in).

6. Langza village (Fossil Site)

Langza village, located at an altitude of 4437 meters above sea level in Spiti Valley, is celebrated as one of the highest villages accessible by road worldwide. It is renowned for its abundant ammonite fauna, earning it the local nickname "fossil village," attracting tourists in search of ancient cephalopod fossils (Krishnanand & Raman, 2019). Notably, Langza features a prominent Buddha statue atop a hill, and nearby Hikkim village, situated just 8 kilometers away, hosts the world's highest post office (Chaskar et al., 2023). Geologists and anthropologists are drawn to Langza due to its rich fossil deposits of marine creatures and plants, dating back millions of years.

7. Pin Valley National Park

Established on January 9, 1987, this site is nestled within the cold desert biosphere of the Himalayan region, offering a unique geological landscape. It serves as a gateway to explore a diverse geological sequence ranging from the Neoproterozoic to the Lower Jurassic periods. Particularly noteworthy is its distinction as the sole location in India where substantial Palaeozoic and Triassic sequences are exposed, making it a compelling candidate for recognition as a National Geoheritage and Geopark (Bhargava et al., 2021). Its rich geological diversity and historical significance make it an invaluable resource for geological research and education, attracting scholars and enthusiasts alike from around the world.

Challenges for Geotourism Development In Lahaul & Spiti:

Geotourism in Lahaul & Spiti faces unique challenges, despite the region's abundance of geological wonders and natural beauty. Many geosites are remote and difficult to access due to rugged terrain, limited infrastructure, and transportation options, hindering visitor flow and facility development. These sites offer glimpses into ancient prehistoric geological formations and Earth structures, but unethical human activity threatens their loss irreversibly (Singh and Anand, 2013

Inadequate infrastructure, including interpretative facilities and geotourist guides, poses further challenges for geotourism development. Additionally, many

geosites are intertwined with local cultures and traditions, necessitating a delicate balance between tourism development and indigenous cultural preservation. The region's susceptibility to climate change impacts, such as melting glaciers and natural disasters, further complicates geosite preservation and conservation efforts.). Limited public awareness and understanding of their geological significance often lead to underappreciation and ineffective geoconservation strategies due to communication gaps (Tripathi, 2020).

Establishing and enforcing policies for sustainable tourism practices, conservation, and geosite preservation are hindered by the involvement of multiple stakeholders. Addressing these challenges requires a collaborative approach involving government bodies, local communities, conservation organizations, and tourists. Sustainable development strategies, community engagement, eco-friendly tourism practices, and promoting responsible tourism are crucial for preserving Lahaul & Spiti's geoheritage.

Recommendations

Establishing geoparks within the region could be a significant step forward. These parks could serve as showcases for the area's rich geoheritages, offering educational opportunities and promoting sustainable tourism. Developing well-defined geo-trails that highlight unique geological features can attract geotourists interested in exploring natural wonders. Offering educational programs, guided tours, and workshops led by experts can enhance visitors' understanding of the area's geological significance.

Combining adventure tourism with geotourism can be appealing, with activities like trekking, rock climbing, and cave exploration providing thrilling experiences while showcasing geological formations. Involving local communities in geotourism initiatives can promote cultural exchanges and sustainable tourism practices. This engagement can include homestays, cultural demonstrations, and locally guided tours.

Collaborating with research institutions to conduct studies and research expeditions in the area can attract academics and researchers interested in the region's geological diversity. Enhancing infrastructure like visitor centers, accommodations, and access roads to geological sites can improve the overall geotourism experience.

Creating a tourist map with the positions of the most important geoheritage sites would draw attention to tourists and encourage their visits. This map should not only contain the exact positions of the sites but also detail their value and importance, allowing tourists to choose destinations based on their interests (Đurović & Đurović, 2010).

Implementing effective marketing strategies, both domestically and internationally, to highlight the unique geological features and experiences offered by Lahaul & Spiti can attract geotourists from around the world. Emphasizing the need for conservation and preservation of geological sites is crucial in ensuring their long-term sustainability.

Conclusion

Lahaul & Spiti, nestled amidst the grandeur of the Himalayas, stands as an untapped reservoir of geological wonders, offering immense potential for geotourism development. The geological formations within the Lahaul & Spiti District of the Northern Himalayan Region encompass a diverse array of rock types and geological periods. Situated in the Tethyan Himalaya, the district's geological complexity is attributed to a wide range of rock complexes and minerals, along with faults exerting structural control over drainage networks throughout the area (Krishnanand, 2016), presents a compelling narrative of Earth's history waiting to be explored. However, despite its geological wealth, Lahaul & Spiti remains overshadowed by a lack of recognition and conservation efforts.

Lahaul & Spiti offers vast opportunities for tourism, spanning various sectors including ecotourism, tribal tourism, and archaeological tourism. The region boasts numerous natural and historical sites of geological significance, such as natural parks, caves, waterfalls, springs, glaciers, and mountain passes (Bhargava et al., 2010). Identifying potential geosites and geoheritages, such as the picturesque lakes, majestic waterfalls, expansive glaciers, rugged mountain passes, ancient monasteries, fossil-rich villages, and the unique Pin valley national park, lays the foundation for sustainable geotourism initiatives. These sites not only offer opportunities for adventure and exploration but also serve as educational platforms for understanding Earth's history and processes.

However, geotourism in Lahaul & Spiti faces several challenges, including limited infrastructure, environmental concerns, and the need for cultural preservation. Addressing these challenges requires a collaborative effort involving government agencies, local communities, conservation organizations, and tourists. Infrastructure development is crucial for enhancing the accessibility and facilities at geological sites. Improving visitor centers, accommodations, and access roads can significantly improve the overall geotourism experience (Krishnanand & Raman, 2019). Collaboration with research institutions can enhance scientific understanding of Lahaul & Spiti's geological heritage while attracting scholars and experts to study its unique landscapes (Singh and Anand, 2013). Furthermore, creating detailed tourist maps highlighting the positions and significance of geoheritage sites can attract more tourists and guide their visits effectively (Đurović & Đurović, 2010).

Addressing challenges such as inadequate infrastructure, environmental concerns and cultural preservation requires a concerted effort from multiple stakeholders (Dowling, 2013). Government bodies, conservation organizations, and tourists must collaborate to establish and enforce policies for sustainable tourism practices and geosite preservation (Panizza, 2001). Through collective action, Lahaul & Spiti can safeguard its geological heritage for future generations while reaping the economic benefits of responsible geotourism.

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Sustainable Tourism in Fragile Ecosystems: Challenges and Opportunities

Rayees Ahmad Bhat & Mandeep kaur

Abstract

The Earth's ecosystems are important and capable of providing for necessities. The Himalayan ranges are home to numerous million people, a variety of rare creatures, and a wide spectrum of religious and spiritual practices. They are located in Asia and span around 2,500 kilometres from east to west. The primary goal of the paradigm of ecologically conscious tourist repercussions for policies is to decouple the link between the rise of tourists and environmental damage. The current work focuses on identifying possible locations for the development of ecotourism in Western Rajasthan, India, utilizing GIS and weightage sum overlay methods based on remote sensing. One of the industries with the quickest rate of growth and profitability that incorporates sustainability is ecotourism. There are several opportunities for Western Rajasthan to grow its tourist industry, primarily via its unique wildlife, historical and archaeological sites, and cultural legacy. These figures are derived from a number of variables and assumptions used during the research. Various forms of data have been extracted from the United States Geological Survey's website for this purpose. To process the data, Arc GIS 10.8 is the latest and ERDAS Imagine spatial planning software 2015 were used. A appropriateness map is the ultimate result we get after analysing each of the theme layers. Seven thematic layers are included in this study: elevation, stream proximity to one another, land use/cover, density of people, road connection, protected area proximity, and historical hotspots. The final suitability map illustrates the potential for ecotourism in Western Rajasthan by showing five classifications of suitability that split the whole region into the following categories: exceptionally high (36.38%), high (78.36%), moderate (5.65%), low (0.86%), and very low (28.56%). By protecting and restoring animal habitats, this review will provide a new approach to management, managing the ecological equilibrium along with encouraging sustainable resource use.

Keywords: *Ecotourism, Western Rajasthan,GIS Analysis*

INTRODUCTION

One in ten employment globally, one-third of global service exports, and one-tenth of the global output are all attributed to tourism. Despite widespread concerns about the potential negative effects of tourism on the environment and the growth of the global economy, tourism is nonetheless praised as a major driver of job and income development worldwide [1]. Researchers and politicians have been very interested in the concept of "sustainable tourism" for the last 20 years.

However, there seems to be a significant gap among theory and practice in this field. Most nations are re-evaluating the effects of tourism and creating policies to support environmentally friendly tourism procedures that can aid in achieving the Sustainable Development Goals (SDG) of the UN after the UN declared 2017 to be the International Year for Sustainable development in Tourism for Development [1, 2].

Thus, a tourism landscape provides the most significant geographical medium to study the connections between visitors and their visited destination based on its image ability and a noteworthy empirical appeal. However, a lot of the world's naturally occurring landscapes that are linked to tourism are undergoing physical changes as a result of climate fluctuations, agricultural practices, building, and other developmental activities [4].

Issues facing the Himalayan area

Global sensu amplo trends clearly demonstrate that natural resources are being used at a far higher tariff compared to the rate at which these assets become mostly obsolete [4, 5]. The Himalayan ecosystem is susceptible to the effects of three main human activities: (a) changes in natural processes, (b) human activity leading to changes in the environment, and (c) contemporary civilization.

Plans of action for Himalayan concerns

Mandeep kaur *Research Scholar Lovely professional university*
Rayees Ahmad Bhat *Former Research Scholar, Department of Tourism & Hospitality, Bhagwant University Ajmer Rajasthan*

In 2008, the National Mission for Safeguarding the Himalayan Environment (NMSHE) was established by the Ministry of Environment and Forests as part of the National Action Plan on Climate Change (NAPCC) to address concerns specific to the Himalayan areas [6, 7]. The goal of the assignment is to determine how the Himalayan ecology and climatic components are coupled in order to provide better livelihood options [8].

In the backdrop of the Himalayas, organic farming

The majority of the foreign nations that border the Himalayas as well as the Indian states in those areas have started and adopted creative organic farming to acquire high-quality goods from their region, bolstering the economy and promoting improved livelihood and sustainability [8, 9]. Meghalaya, a state in northeast India, was the first to proclaim itself an organic state.

The preservation of wildlife in the Himalaya

With approximately 10,000 plants, 300 animals, 977 birds, 281 herpetofauna, 269 fish, and many species of invertebrates and microorganisms, many of which have worldwide conservation importance, the Indian Himalayan Region (IHR) is one of the world's most biodiverse places. Notwithstanding its important ecological, [9, 10], hydrological, and biological advantages, the IHR's delicate alpine ecosystems are gravely endangered by growing human pressures, namely development.

Endangering the Himalayan ecology is pollution

The fate of the Himalayas, which suffer from the same urban decay as the lowlands, is a cause for increasing worry. Such an uncontrolled society would devolve into piles of trash and plastic, raw sewage, unrelieved water shortages, unplanned urban growth, [11], and vehicle-related air pollution. As a result, the Himalayan towns should be carefully constructed to minimise summertime tourist, which will not fund municipal services [12, 13].

Urban development

The new administration enters office at a critical policy juncture, facing rapid urbanisation, rising energy needs, environmental degradation, diminishing agricultural productivity, a lack of human capital, the creation of productive employment, new security concerns, and the need to reposition India in a changing global order [14, 15]. The Indian states that share the Himalayas serve as its major sentinels.

Tourism is an amalgam of several interconnected sectors. ICT use has completely revolutionised it with features such as online reservation, finding information via multiple online platforms and social networking sites, more flexible and tailored service offerings, integrated management of consumer services, and supply chain management [16]. ICT has also helped to enhance visa processing and travel facilitation.

The state's agricultural cultivation sector is supported by Rajasthan's eleven agro climatic zones and a variety of soil types that encourage the development of various crops. In 2020–2021, food grain output rose by 7.49% to around 19.79 million tons, comparing to the 26.58 million metric tons produced in 2019–2020 [17]. Current projections place Rajasthan's GSDP for 2022–2023 at INR 497648 crore. This is a 12.4% increase above the revised projected Gross State Domestic Product (GSDP) of INR 149761 million for the 2021–2022 period. In 2019–2020, the state's economy was primarily driven by the hospitality sector (17.35%), with agriculture (47.65%) and the manufacturing sector (47.57%) lagging closely behind [18]. Rajasthan's western region is renowned for its folklore, literature, art, and music. Seldom is any other region in India as rich in natural riches and native human culture [19]. The principal cultural assets of Western Rajasthan are its buildings, forts, the temples, the pilgrimage destinations, archaeological sites, mining, and natural features like sand dunes and sunshades. The friendly and hospitable nature of the people of Western Rajasthan also draws tourists to the area.

Because of this, Remote Sensing (RS) and GIS (Geographic Information Systems) are essential for quickly examining regions that are hard to reach and gathering a thorough picture of the site. The market is full of products and methods that help achieve the finest outcomes with a minimum number of resources [19, 20]. A Geographic Information System uses the least amount of resources while producing good outcomes. According to current trends, GIS is essential for tracking and reducing risks to biodiversity and animals while promoting sustainable growth for society.

Objectives of the study

- To evaluate Western Rajasthan, India, for sustainable ecotourism prospects using cutting-edge GIS technologies.
- Examine current global programs and practices for sustainable tourism, such as ecotourism, responsibility travel, and community-based tourism, which are being applied in fragile environments.

LITERATURE REVIEW

(Aayog, N. I. T. I. 2018) [21] Approximately 27% of the Earth's surface is made up of mountains, which are essential to the survival and well-being of the billions of people who live downstream as well as the 720 million people who live there. Put another way, more than half of all people on Earth rely on mountains for their access to clean energy, food, and water. However, natural disasters, overexploitation, climate change, and land degradation pose a threat to the mountains, with potential disastrous effects on both communities living in the mountains and those downstream.

(Rej, S., 2023) [22] The primary goal of the paradigm of

environmentally conscious tourist policy implications is to decouple the link between the increase of tourism and environmental damage. The study revisits the dynamic correlations between carbon dioxide emissions, economic growth, foreign tourists, learning, utilization of renewable energy, and the creation of gross capital for the case of India through the lens of the Kuznets curve as an environmental issues the hypothesis framework.

(Rej, S., 2021) [23] Given growing public awareness of environmentally friendly growth and environmental protection, ecotourism research has garnered a lot of interest recently. However, conflicts related to interests amongst stakeholders frequently have a detrimental impact on the efficacy and efficiency of ecotourism construction when it comes to the development and building of the industry in environmentally sensitive locations.

(Ramachandra, T. V., 2019) [24] The degree of anthropogenic pressure, ecological deterioration, and their effects on local well-being are all taken into account when evaluating land use and land cover changes in wooded areas. There will be a permanent depletion of habitat due to the rapid proliferation of linear constructions like highways and electricity lines since they will split the forest and disrupt local biological processes.

Methodology

Study area

Four primary districts, totalling 114,256 km2, make up the research geographical area of Western the state of Rajasthan: Jodhpur (25.6689° N, 23, 4214° E), Jaisalmer municipality (25, 7684° N, 70.9083° E), the Bikaner region (28, 4768° N, 84, 4265° E), [21], and Barmer (57,5748° N, 78, 4687° E) as shown in Figure 1.

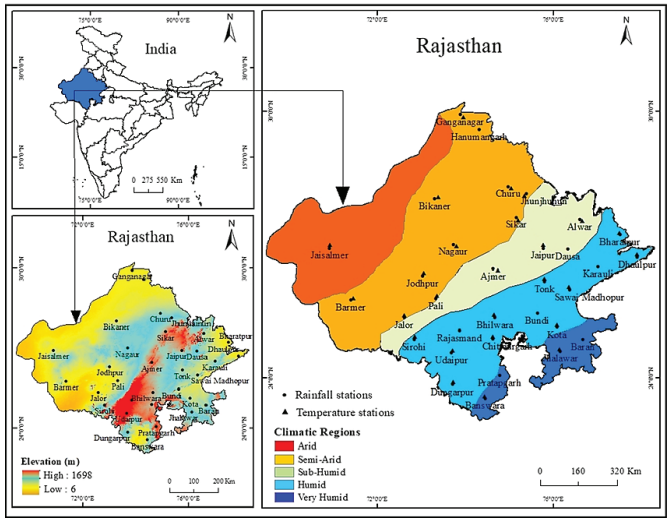

Fig. 1 A map demonstrating the research area's location in Western Rajasthan, India.

LULC Mapping

Land Use and Cover Maps Provide geographic information on the several physical encompassing classifications that exist in the Earth's uppermost layers. ERDAS Imagine 2015 was used for image processing to identify land-use groups, and Arc GIS 10.8 application was used to get additional details using DN values [22].

Protected Area

According to the International Union for Conservation of Nature, protected zones are places where inappropriate resource use is either completely banned or severely restricted. From a tourist standpoint, protected places are essential to comprehending the natural wildlife more thoroughly. Table 1, which was obtained from the ENVIS Centre on the Wild Life and Protected Area website, prominently lists the significant protected areas for wildlife in Western Rajasthan.

Table 1 There are significant protected areas in India's Western Rajasthan.

S. No.	Name	District	Area (km)2
1	Jorbeer Conversation Reserve	Bikaner	58.964
2	Desert National park	Jaisalmer and Barmer	6481.696
3	Wildlife Guda Bishnoiyan	Jodhpur	2.596

Result

Due to its abundance of stunning and exciting historical places, Western Rajasthan has a great deal of potential for tourism-related enterprises [23]. A good management system is necessary for ensuring the successful growth of tourism-based activities since it establishes a ladder for the creation of different kinds of chances for the lives of the community.

Through the identification of appropriate ecotourism locations, the current research aims to create a cohesive strategy for the growth of ecotourism. After doing the research study, a final suitability map was produced using the weighted sum overlay evaluation method and the geospatial approach (Figure 2).

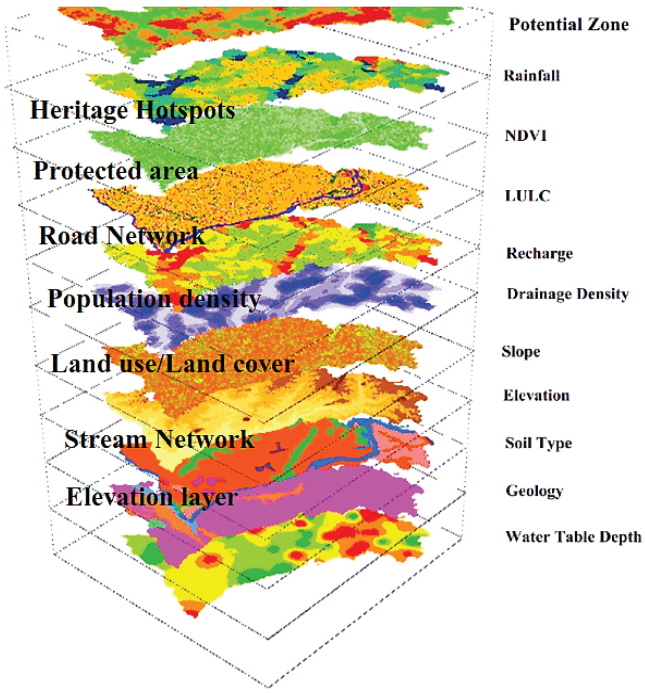

Fig. 2 All of the index maps overlaid.

The research makes use of cutting-edge scientific techniques and data sources to thoroughly evaluate the study area's potential for ecotourism [24, 25]. The a SRTM DEM, a high-resolution images digital the elevation model downloaded from the USGS website, is the main dataset used.

This study indicates that the final suitability map displays data that is divided into five distinct suitability categories: exceptionally high, moderate, moderately high, low, and very low. Figure 3 displays the final suitableness map for the development and management of environmentalism in Western Rajasthan. It is evident that about 37.31% of the entire area is made up of the region with very high adaptation, which is mostly found in the municipality of Bikaner and Jaisalmer [26, 27]. About 26.85% of the territory is very suitable, and it is mostly concentrated in three areas: Jodhpur in Barmer, and Bikaner. 7.89% of the land is classified as having moderate suitability, with the Barmer region making up the majority of this area [28]. The Barmer region comprises 0.83% of the low suitability area, which is attributed to a number of unfavourable conditions including poor infrastructure development and restricted road, rail, and air connections.

Finally, the research acknowledges the significance of historical locations in drawing visitors. These places provide information on the region's rich cultural and artistic legacy. The research locates and maps these cultural hotspots using GPS data, [29], establishing buffer zones at different separations to gauge how close they are to possible ecotourism destinations.

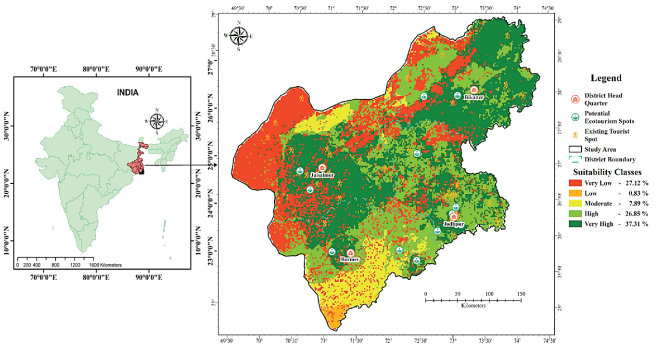

Fig. 2: The Western Rajasthan, India, Ecotourism Suitability map.

To further emphasize the importance of these historical locations, the theme weighting is changed appropriately. Through the integration of scientific approaches and the consideration of several elements, the research offers an in-depth assessment of the potential for ecotourism in the study region. A comprehensive approach to locating and evaluating appropriate ecotourism sites is ensured by the use of cutting-edge data sources, analytical methods, and theme weightages, all of which support sustainable tourism practices [30, 31]. The establishment of ecotourism destinations requires careful planning to ensure the sustainable use of both artificial and natural tourist resources.

Discussion

The results of this study's use of Geographic Information Systems (GIS) and remote sensing methods indicate that Western Rajasthan has a significant lot of potential for the growth of environmentalism. This potential has been made clearer by the weightage sum overlay examination approach, which is GIS-based and was used in this study. The research shows that a sizeable chunk of the territory, almost 37.31% of the total land, is included inside a sizable potential zone [32]. These potential zones are mostly found in the districts of Jaisalmer and Bikaner, which are also very popular tourist sites. The significance of enhancing the establishment and upkeep of ecotourism destinations in Western Rajasthan is underscored by these findings. An environmentally conscious approach with an emphasis on minimizing environmental damage, ecotourism is a perfect fit for the development of Western Rajasthan. It provides the chance to fully immerse guests in the region's breathtakingly beautiful and environmentally delicate landscapes, exhibiting its exceptional natural beauty, varied animals, and distinctive ecosystems.

Conclusion

This research used weightage sum overlay analytic methodologies and geospatial approaches to establish a unified strategy to ecotourism development. Multiple geographical data layers might be integrated thanks to

the GIS-based analysis, allowing decision-makers to make well-informed choices based on the relative relevance of each layer. Five different suitability classifications, ranging from very high to very low, are shown in the final suitability map that is produced. The districts of Bikaner and Jaisalmer were the main concentration of the study's high ecotourism appropriateness locations. Nonetheless, low adaptability locations are exacerbated by issues like poor infrastructure and poor connection in the Barmer region. Unchecked, avaricious human activity using natural resources is the secondary cause of the Himalayan ecosystem's deterioration problems. Therefore, it is a crucial and opportune time to respond more swiftly to causes that have long been seen as endangering the rich and natural environment of the very vulnerable area. This study has a great deal of promise for more research. The suitability map generated by this study might serve as a foundation for Western Rajasthan's future ecotourism planning and development.

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Potential Assessment of Wellness Tourism in Varanasi Region

Alok Ranjan Singh & Dr Anil Kumar Singh

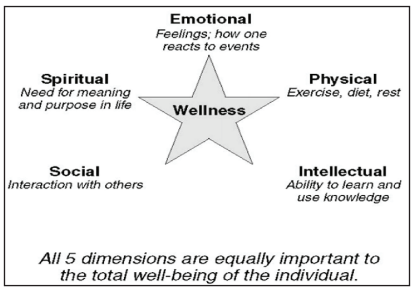
Abstract

The city, renowned as the cultural capital of India, embodies a multifaceted essence encompassing spirituality, yoga, Ayurveda, naturopathy, and sociology. Its orientation towards a holistic lifestyle, prioritizing aspects beyond mere materialism, renders it an ideal haven for wellness tourism. Wellness tourism entails journeys undertaken with the explicit aim of enhancing or maintaining personal well-being. This type of travel focuses on physical, mental, spiritual, or environmental health and can occur during both leisure and business trips. Post Covid-19 pandemic tourism can be performed keeping in mind the rejuvenation of body, mind and spirit altogether (आरोग्यं परमं भाग्यं स्वास्थ्यं सर्वार्थसाधनम ।।) - these are three essential dimensions of 5-point wellness tourism model. (Corbin et al. 2006). Current study is a systematic evaluation of the standard parameters for wellness tourism available in Varanasi and study of the demand & awareness of tourist and local people on wellness tourism in Varanasi. It is a mixed bag study of qualitative and quantitative research methods.

Keywords: *Wellness, Tourism, Varanasi, Yoga, Ayurveda, Spirituality.*

Introduction

The conceptual understanding of wellness takes it to the point where dearth of illness could not be classified as wellness. It is a positive approach of having good health, purpose in life, satisfaction, work, play, healthy body, environment and happiness etc. Wellness can be comprehensively described as the integration of physical, mental, and spiritual health, resulting in a state of overall well-being. Wellness tourism encompasses journeys aimed at rejuvenating one's mental, physical, and spiritual health. As defined by the Global Wellness Institute, this form of travel emphasizes the preservation or improvement of individual well-being through a range of activities encompassing physical, mental, spiritual, and environmental aspects, pursued either for leisure or professional purposes. The five-dimensional model aptly encapsulates the essence of wellness tourism.



Wellness in totality is equilibrium of Emotional, Physical, Social, Intellectual and Spiritual aspects of an individual. If one lives in accordance to all of it together wellness is inevitable. At times to reenergize all these individuals opt to travel to evaluate their current situations of life or at times to enhance it to higher levels.

Wellness Tourism Market Worldwide: The wellness tourism is a proactive approach towards holistic health. Major points of wellness tourism in comparison to medical tourism are as follows: -

1- Travel to sustain, enhance, or manage health and wellbeing.

2- Driven by a commitment to healthy living, preventing illnesses, reducing stress, managing unhealthy lifestyle choices, and seeking genuine experiences.

3- Activities are designed to be proactive, voluntary, non-invasive, and non-medical.

The current picture shows part and parcel of overall demography of wellness tourism worldwide. Highlighted area of India is indicative of Meditation, Yoga and Ayurveda retreats as a unique tourism product of India for wellness tourism. It's not limited to that itself as many other products of wellness tourism is prevalent and famous amongst domestic tourists and can be presented to international tourists as well.

Alok Ranjan Singh *Research Scholar Tourism Management, Department of History of Art, Faculty of Arts, BHU*
Dr Anil Kumar Singh *Assistant Professor, Tourism Management, Faculty of Arts, BHU, Varanasi*

According to Global Wellness Tourism estimates, India held the 7th position in wellness tourism in 2017, with 56 million trips generating a total revenue of USD 16.3 billion.

India has emerged as a prominent player in the global medical tourism landscape, securing the 10th spot in the Medical Tourism Index (MTI) for 2020-21, among 46 competing destinations, according to the Medical Tourism Association. This recognition underscores India's growing stature as a preferred destination for medical treatments and procedures worldwide.

Constituting 6% of the global Medical Value Travel (MVT) market, India's healthcare sector has witnessed a significant influx of approximately 1.4 million medical tourists in the past year alone. This influx speaks volumes about the trust and confidence international patients place in India's healthcare infrastructure, expertise, and affordability.

Highlighting the country's commitment to nurturing healthcare professionals, the Ministry of Tourism's website notes that India boasts 1,000 accredited nursing training centers. These centers collectively churn out an impressive 10,000 nursing graduates annually, ensuring a steady supply of skilled healthcare personnel to cater to both domestic and international healthcare needs.

India is widely recognized for its extensive heritage of traditional medicine systems like Ayurveda, yoga, and naturopathy, which significantly contribute to the nation's wellness tourism sector. A significant proportion of foreign patients seeking medical treatment in India come from diverse countries such as Bangladesh, Iraq, Maldives, Afghanistan, Oman, Yemen, Sudan, Kenya, Nigeria, and Tanzania, accounting for approximately 88% of the total overseas patient influx. This pattern is reinforced by a consistent increase in the number of patients from both developing and developed nations, pointing towards a favorable outlook for the healthcare tourism industry. Forecasts predict a significant expansion of this industry by the year 2026.

India's healthcare infrastructure is widely acknowledged for its robustness and accessibility, boasting advanced diagnostic facilities that are renowned worldwide for their quality and affordability. This acknowledgment solidifies India's standing as a pivotal contributor to the worldwide healthcare arena. India not only boasts exceptional medical proficiency but also provides an environment conducive to comprehensive healing experiences.

Literature Review: Wellness, while a term of modern coinage, finds its roots entwined with the tapestry of history. Although its contemporary understanding has blossomed notably since the 1950s, its essence resonates through the corridors of time, echoing the contributions of visionary American physicians and scholars. Yet, to grasp the true essence of wellness, one must embark on a journey through epochs, tracing its lineage to epochs long past.

The notion of wellness transcends any particular epoch, harkening back to the vibrant intellectual milieu of the 19th century. In this era of profound change, nascent notions began to surface, laying the groundwork for the comprehensive comprehension of wellness we presently embrace. Diverse intellectual, spiritual, and medical movements across the United States and Europe in this epoch forged the bedrock for a transition towards a broader perspective on health and well-being.

Wellness is not just a modern concept; it is a timeless pursuit deeply embedded in human history. Its development mirrors the accumulated knowledge of both ancient and current civilizations, highlighting humanity's persistent quest for health and well-being. As we face the challenges of contemporary life, we should tap into the rich reservoir of wisdom from the past, adopting a comprehensive approach to wellness that acknowledges its full scope and variety.

Ancient Wellness

3,000-1,500 BC: Ayurveda – Ayurveda, originating from an ancient oral tradition and subsequently documented in the Vedas, embodies a comprehensive approach to well-being. It endeavors to foster equilibrium among the body, mind, and spirit, offering personalized regimens based on individual constitutions.

3,000 – 2,000 BC: Traditional Chinese Medicine (TCM), One of the most ancient medical systems in the world, Traditional Chinese Medicine (TCM), has its roots deeply intertwined with Taoism and Buddhism. Practices derived from TCM, including acupuncture, herbal remedies, qi gong, and tai chi, have not only found their place in modern wellness practices but have also been integrated into Western medical methodologies*500 BC:* Hippocrates, an ancient Greek physician, is often considered the pioneer in emphasizing the prevention of illness rather than just the treatment of diseases. He also proposed that diseases are influenced by diet, lifestyle, and environmental conditions.

50 BC: Ancient Roman medicine placed a strong emphasis on disease prevention, drawing inspiration from Greek philosophy which attributed illness to factors like diet and lifestyle.

19th Century Intellectual & Medical Movements: During the 19th century, both the United States and Europe witnessed a notable surge in novel intellectual movements, spiritual philosophies, and medical practices. This era marked the emergence of diverse alternative healthcare methodologies emphasizing self-healing, holistic techniques, and preventive healthcare. Prominent among these were disciplines like homeopathy, osteopathy, chiropractic, and naturopathy, which gained substantial acceptance throughout both regions.

Research Gap: On the front of wellness to cater the mind, the body and the spirit naturally, the city is having all to offer to one and to all. It is well-desired for spirituality, knowledge, enlightenment and variety of traditional systems like *yoga, meditation and Ayurveda, Unani, siddha, pranic healing, acupressure, acupuncture and spiritual therapies* also. Varanasi has long been celebrated for its rich heritage in wellness traditions, offering extensive opportunities for those seeking wellbeing.

Lacks of proper education, language barrier, government's support are few to mentions out to chalk out for point of betterment. Need of destination branding is required in Varanasi and its regions to make it wellness hub. Awareness of people is important for the growth of Wellness tourism & professionals in Varanasi and regions. Attention of government is a needed to develop Varanasi and regions as wellness hub.

Research Questions

Are people in Varanasi aware about wellness tourism in Varanasi and nearby regions?

How is wellness tourism perceived by people of Varanasi and nearby regions?

What factors can attract wellness tourists in Varanasi and nearby areas?

What challenges hinder the progress of wellness tourism in Varanasi and its adjacent areas?

Objective of the Study

To examine the Wellness tourism potential with reference to the Study area.

Hypotheses

(H1) Varanasi and its region have immense potential to be developed as the most sought out wellness tourism destination in the world.

Research Method

Research Design: The current research approach is Inductive in nature. The methodological choice is qualitative and quantitative both. The research strategy is obtained from survey, questionnaire etc. to make it a mixed approach of primary and secondary data collected through various means. To mark important sources of primary data is interviews, observation, comparative studies, case studies, questionnaires and field surveys.

This study adopts a descriptive approach, gathering secondary data from a diverse array of sources including online resources, research articles, academic journals, reference materials, newspapers, magazines, and books. Primary research relies on the analysis of secondary data to identify key focal areas for subsequent investigation, with specific reference to studies, publications, and articles concerning wellness travel. This particular research study is mainly supportive secondary data to some extent and is descriptive in nature. The primary data is through interview, survey, questionnaire, observation. This research is going to feature to the explanations of the methods and plan of action done in order to acquire the data how to be examined, interpreted and the way the end is met.

Area of Research: The area of research is Varanasi and its region for development as a world class wellness tourism spot.

Sampling & Data Collection: The data was collected from questionnaire (foreign tourists & tourism professionals) using convenience sampling method. Initially the observation, comparative analysis, interviews, case studies, survey, records & past research studies methods were used to collect general data to construct the questionnaire. Overall collection of data was around 180 out of which 150 is found suitable for this research work.

Data Analysis: Initial data analysis which were general in nature were analysed on *Microsoft Office Excel Worksheet*. Advance and final descriptive analysis is done on R-studio R 4.2.2 of overall 43 variables of competitiveness for wellness destination.

Analysis & Findings

Tourist's profiling: Demographic characters like gender, age, origin, occupation, purpose of visit etc.

Demographic Characteristics	Category/Class	Percentage
Gender	Male	56
	Female	44
Age groups (Years)	20-29	52
	30-39	22
	40-49	10
	50-59	8
	60 and above	8
Region-wise origin	Tourists belonging to Europe	56
	Tourists belonging to USA	22
	Tourist belongign of Australia	5
	Tourists belonging to West Asia & Africa	3
	Tourists belonging to East, SE & South Asia	14
Tourist Class as per hotel tariff rate	Low	42
	Medium	38
	High	20
Occupation	Teacher	13
	Doctor	6
	Engineer	7
	Business/Commercial Executives	16
	Writer/Musician/Painter etc.	4
	Govt. Officers/bureaucrats	8
	Nurse/Social Workers	8
	Students	26
	Others	12
Purpose of Visit	Holiday and Sight-seeing	62
	Business/Conference	8
	VFR	3
	Study-related tour, project work, field work etc.	23
	Others	4
Duration of stay at Varanasi	1to 3	27.6
	4to7	29.1
	8to14	11.5
	15to30	13.5
	31to90	9.4
	91to100	8.9

Dimensions of competitiveness assessment for wellness tourism destination: Analysis-

Dimensions of the Wellness Destination Competitiveness Assessment	
1- Destination Environment	1a- Political Stability
	1b- Number of University Hospitals
	1c- Perceived Safety
	1d- the Sanitation, Hygiene & Cleanliness
	1e- Human Resources & Local Labour Mkt.
	1f- Friendliness of Local People
	1g- Responsiveness of Tourism Employees
	1h- Ease of Communication
	1i- Communication Infrastructure
2- Wellness Tourism Policy	2a- Transportation
	2b- Methods to Attract
	2c- Price Competitiveness
	2d- Destination Package
	2e- Cost relative to Competitor
	2f- Environmental Sustainability
3- Wellness Tourism Infrastructure & Capacity	3a- Connectivity
	3b- Local transportation
	3c- tourism Service Infrastructure
	3d- Accessibility & Accommodation
	3e- Quality Food & Meals
	3f- Activities
	3g- Recreational Opportunities
4- Wellness Tourism Man-Made & Cultural Resources	4a- Destination Appeal
	4b- Natural Attractions
	4c- Cultural Attractions
	4d- Local Knowledge
	4e- Resource for Wellness Activities
	4f- Modern Medical Facilities
	4g-Readiness of Wellness Resources
	4h- Other Services
5- Wellness Tourism Strategy & Structure	5a- Professional Services
	5b- Awards
	5c- Quality Certificates
	5d- Customer Satisfaction
	5e- Ease of Services
	5f- Spas & Wellness activities
	5g- Rejuvenating Activities
6- Wellness Tourism Innovation Potential	6a- New Products Development
	6b- Openness to New Products

	6c- Adaptive Response System
	6d- Community Support
7- Wellness Tourism Collaborative & Proactive Marketing	7a- Collaborative Cluster
	7b- Collaborative Projects
	7c- Local Support
	7d- Public & Private Partnership
	7e- Targeted Brand Building
	7f- Brand Identity

Destination Environment

Political stability	Result
Mean	4.473333333
Standard Error	0.054912309
Median	5
Mode	5
Standard Deviation	0.672535687
Sample Variance	0.452304251
Kurtosis	1.258302291
Skewness	-1.176332196
Range	3
Minimum	2
Maximum	5
Sum	671
Count	150
Confidence Level(95.0%)	0.108507446

The statistical summary for the factor "Political stability" in the Destination Environment:

1. **Mean**: The average score for political stability is 4.47 out of 5, indicating generally high stability.
2. **Standard Error**: The standard error, which quantifies the precision of the mean estimate, stands at approximately 0.055 in this context.
3. **Median**: The middle value of the data set is 5, suggesting that half of the responses rated political stability at 5 or higher.
4. **Mode**: The most frequent score is also 5, indicating that it's the most common rating for political stability.
5. **Standard Deviation**: This calculates the spread or diversity of the scores relative to the average. The value obtained, 0.67, indicates a degree of variability in the ratings.
6. **Sample Variance**: This value, approximately 0.45, represents the variance of the data, reflecting its dispersion from the mean.
7. **Kurtosis**: Kurtosis serves as a measure of the degree of peakedness or flatness within a distribution. When the kurtosis value is positive, it indicates a distribution that is relatively peaked. With a kurtosis value of 1.26, the distribution can be described as moderately peaked.
8. **Skewness**: Skewness is a statistical measure utilized to assess the asymmetry of a distribution. When the skewness value is negative, it signifies a leftward skew, indicating that the distribution tends to have more values towards the lower end than the higher end. For instance, a skewness value of -1.18 suggests a moderate left skew within the distribution.
9. **Range**: The range, which denotes the extent of variation within responses, is 3, representing the disparity between the highest and lowest scores..
10. **Minimum**: The lowest score given for political stability is 2.
11. **Maximum**: The highest score given for political stability is 5.
12. **Sum**: The sum of all the scores given for political stability is 671.
13. **Count**: The number of responses collected for political stability is 150.
14. **Confidence Level (95.0%)**: This represents the confidence interval around the mean. Specifically, it is about ±0.11, indicating a 95% confidence level that the actual population mean falls within 0.11 units of the sample mean.

Wellness Tourism Policy

Transportation	Result
Mean	4.253333
Standard Error	0.068989
Median	5
Mode	5
Standard Deviation	0.844935
Sample Variance	0.713915

Kurtosis	-1.41205
Skewness	-0.51063
Range	2
Minimum	3
Maximum	5
Sum	638
Count	150
Largest(1)	5
Smallest(1)	3
Confidence Level(95.0%)	0.136322

Interpretation of the statistics in the context of transportation as a factor in wellness tourism policy:

1. **Mean (Average)**: The average rating given to transportation in the context of wellness tourism policy is approximately 4.25. This suggests that, on average, people perceive transportation positively in relation to wellness tourism policy.
2. **Standard Error**: The standard error, which is about 0.069 in this instance, indicates the variability in the sample mean. It provides an estimate of how much the sample mean is likely to differ from the actual population mean.
3. **Median (Middle Value)**: The median rating of 5 implies that transportation tends to be rated highly in wellness tourism policy. This means that half of the ratings fall at or above 5, indicating a generally positive perception.
4. **Mode (Most Common Value)**: With a mode of 5, it indicates that 5 is the most frequent rating given to transportation, reinforcing the idea that it is commonly perceived positively.
5. **Standard Deviation**: The standard deviation, approximately 0.845, shows the variability in transportation ratings. Given a mean of around 4.25, it suggests that individual ratings typically differ from this mean by about 0.845 points on average.
6. **Sample Variance**: This indicates the extent of the spread of ratings around the mean. A variance of approximately 0.714 suggests moderate variability in the ratings.
7. **Kurtosis**: With a negative kurtosis of -1.412, the distribution of ratings is slightly flatter than a normal distribution. This means there are fewer extreme ratings compared to a normal distribution.
8. **Skewness**: The negative skewness value of approximately -0.511 indicates that the distribution of ratings leans slightly to the left, suggesting a tendency towards more frequent occurrence of lower ratings in comparison to higher ones, as opposed to a symmetrical distribution.
9. **Range (Difference between Maximum and Minimum)**: The range of 2 (from 3 to 5) indicates the spread of ratings. This means that the ratings for transportation vary by a maximum of 2 points.
10. **Minimum and Maximum**: The lowest rating given to transportation is 3, while the highest rating is 5, providing insights into the range of perceptions.
11. **Sum and Count**: The sum of all ratings is 638, and there are a total of 150 ratings considered in the dataset.
12. **Confidence Level (95.0%)**: With a 95% confidence level, the true population mean rating for transportation falls within a range of ±0.136322 of the calculated sample mean. This provides an indication of the precision of the estimated mean rating.

Overall 43 factors of Competitiveness Assessment Scale were evaluated in the current study and the outcome as mentioned above are chiefly aligned to the hypothesis. All factors are positive to a greater extent in context of Varanasi Region for the development of the wellness tourism.

Initial Focused Products/Activities for Wellness Tourism in Varanasi

The city has always been a centre of knowledge, spirituality, philosophical discussions, medicine, ayurveda and activities which either directly or indirectly promotes a holistic life-style or to say way of living. The focal points of discussion in this particular research are the three major dimension of this holistic lifestyle to say *Yoga, Ayurveda & Spirituality.*

Yoga

The Yoga is an ancient Indian holistic lifestyle technique which almost incorporates all facets of life or lifelong activities of any individual. It is a well-defined approach towards an activity undertaken by an individual. The word originated from ancient Sanskrit word Yuj which etymologically means 'to unite'. It is a unity to universal conscious of an activity where an individual achieves sublime wisdom towards the activity undertaken. It is establishing a perfect harmony with nature to achieve a particular task. The history of Yoga dates back to Indus Valley Civilization where yogic practices are found out in contextual explanations. The ancient seals of Indus Valley depict a figure in yogic sitting posture in between animals representing proximity of nature. The figure is interpreted by scholars as ancient form of Shiv the perennial yogi. The Indus Valley Civilization dates of 3500-3000 BC can be taken as the ancient dates of Yoga.

History of Yoga	
Time Period	Details
Origins and Early Development	Indus Valley Civilization around 5000 year ago
The Classical Period and the Yoga Sutras	Yoga Sutras of Patanjali around 2 century BC onwards
The Development of Hatha Yoga	the medieval period
Yoga in the Modern Era	19th to 20th century

Ayurveda: Ayurveda, derived from the Sanskrit terms "Ayu" meaning "life" and "Veda" meaning "knowledge," represents a holistic comprehension of life. Rooted in ancient wisdom, this system offers a profound understanding aimed at enriching life's quality. As highlighted by Muralidhar and Karthikeyan (2016), Ayurveda explores the positive and negative dimensions of existence, distinguishing between states of contentment and distress, pinpointing the factors contributing to these states, and unraveling the essence of life itself.

Central to Ayurvedic practice is the utilization of herbal remedies and treatments, which are renowned for their efficacy in fostering holistic well-being, both physically and mentally, devoid of adverse side effects. The innate healing properties of herbs serve as natural allies in restoring health and equilibrium to the human body and psyche.

A core tenet of Ayurveda is its emphasis on preventative measures and the augmentation of the body's innate capacity for self-maintenance and harmony. In alignment with this philosophy, Ayurvedic treatments are characterized by their non-invasive and non-toxic nature, rendering them safe and suitable for employment as either standalone therapies or complementary adjuncts to conventional medical interventions.

The versatility of Ayurveda is evident in its extensive application across a spectrum of ailments, ranging from acne to ulcers, and encompassing conditions such as allergies, asthma, anxiety, arthritis, and beyond. Its efficacy in addressing diverse health concerns underscores its status as a holistic healthcare system with profound implications for overall well-being.

Ayurveda has captivated individuals globally for centuries, particularly in developed nations. Across history, foreign travelers have journeyed to India to delve into its wisdom, immersing themselves in Ayurveda alongside religious and philosophical studies at esteemed institutions such as Nalanda, Taxila, and Kashi. This cultural exchange is evident in the integration of Ayurvedic concepts into diverse traditional medical practices worldwide. Religious leaders, particularly Buddhist scholars, have played a pivotal role in spreading Ayurvedic teachings internationally, notably in East Asian regions like Malaysia, Cambodia, Thailand, Myanmar, Japan, Singapore, Korea, and Tibet.

Spiritual Tourism: Spirituality encompasses a range of concepts intertwined with religious traditions, a focus on self-philosophy, inner tranquillity, holism, interconnectedness, intentionality, exploration, experiential orientation, nontheistic cosmology, peacefulness, tolerance, and associated positive values (Heidari et al., 2018). In contemporary society, many individuals are drawn to seek meaningful answers to the existential void prevalent in modern lifestyles (Robledo, 2015). Consequently, present-day spirituality exhibits certain inclinations towards exploration in terms of both physical locales and personal introspection. Sharpley and Jepson (2011) assert that spirituality, as a postmodern reinterpretation of religion, necessitates achieving harmony between the individual and their surroundings, with tourism serving as an ideal avenue for enthusiasts seeking profound experiences of spirituality and religiosity (Kujawa, 2017). While spirituality has long been recognized as a primary motivator for tourism (Bowers & Cheer, 2017), contemporary tourism increasingly incorporates spiritual elements into its operational frameworks (Robledo, 2015). Currently, destinations worldwide are increasingly recognizing and leveraging the potential of spiritual tourism, sometimes intersecting with religious practices in locales such as India (Haq & Medhekar, 2020).

Conclusion and Discussion: The hypothesis is aligned and the outcomes are rewarding to the constructions in context of the area of the study. It clearly indicates that the city and region can be developed as a major wellness tourism destination in the world. Evaluating the secondary sources and explaining it on the parameters of wellness tourism, the basic raw products, prevalent tourism & products, allied services, activities, infrastructure, collaborative & proactive participations, PPP etc. are all to a greater extent very supportive for development of the city & region as a hub of wellness tourism destination. It is suggestive that parts of it need proper evaluations, implementation and betterment to make it a world class wellness tourism destination. Few policy changes, mindset of tourism professionals, tourism participants, community understanding is required. Branding is another aspect that need to be redesigned to a certain extent.

Limitations & future research recommendations: As any single study of primary nature can't incorporate all the facets of the area so is true to this research work as well. It has tried all the elements of the wellness tourism competitiveness assessment points but still there is a scope to take it to higher dimensions. Initial product suggestions are in line with the current tourism practices of the city but later other products can also be incorporated and researched as this study itself indicates to some point.

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