Shahrood University of Technology

Journal of Mining and Environment (JME)

Journal homepage: www.jme.shahroodut.ac.ir

Iranian Society of Mining Engineering (IRSME)

Revitalizing Mining Landscapes as Geoheritage Tourism Assets: Comparative Insights from Jharkhand and Rajasthan, India

Aditi Nag*

Department of Architecture and Design, Faculty of Science, Technology and Architecture, Manipal University Jaipur, Jaipur, Rajasthan, 303007 – India

Article Info

Received 3 May 2025

Received in Revised form 9 June 2025

Accepted 30 June 2025

Published online 30 June 2025

DOI: 10.22044/jme.2025.16168.3123

Keywords

Mining Landscape Reclamation

Post-Mining Land Use

Visitor Perception Analysis

Sustainable Tourism Development

Community Participation

Abstract

India's mining heritage sites (MHSs) represent underdeveloped tourist avenues for culture conservation and community upliftment. This study undertakes a dual-site comparison depending on a mixed-methods approach combining perception surveys of visitors, satellite image analysis, and statistical techniques involving t-tests, chi-square analysis, and hierarchical clustering, for Dhori Mines (Jharkhand) and Barr Conglomerate (Rajasthan). Results starkly reveal contrasts: while Barr confirms ecological recovery and community integration, Dhori suffers due to infrastructure and interpretive constraints. Other strategies include AI-powered heritage interpretation and visitor segmentation to improve site competitiveness. It emerges from the findings that data-oriented landscape and tourism planning coupled with local participation can sustain and promote post-mining landscapes effectively.

1. Introduction

A significant and often contested subject at the nexus of World Heritage (WH) studies, industrial heritage management, and sustainable tourist planning is whether our post-industrial landscapes should be preserved for their cultural value or regenerated for their economic potential. In contrast to the previously preferential approach, present discourse tends to endorse global frameworks that oversee community-generated and sustainable tourism policies to industrial and/or World Heritage Sites (WHSs). Still, these concerns are echoed in heritage and policy research. Scholars like James and Winter [1] and Lwoga [2] do not assume that they know what economic approach is optimal for a particular landscape or community or what scale development should occur. Stakeholders approach these industrial WHSs from this latter perspective. The historical, social, technological, and cultural values of former living communities are preserved in mining residues [3-4]. They combine the entire spectrum of attention to create tourism activities and commercial prospects since they are locations where cultural, social, economic, and anthropological currents converge [4-5]. Although the mining industry is considered a significant economic segment, many former mines were removed rather than preserved and put to new uses because the material remnants of the digging activities were typically viewed as undesirable aspects of the environment [4,6]. Other international heritage bodies such as TICCIH (2003) actually reassessed and reinterpreted mining residues as culturally significant resources deserving of protection and strategic reuse [4]. Thus, disused mining landscapes provide ever-increasing opportunities of geotourism, utilising natural, man-made, and social values for site

Corresponding author: ar.aditi204@gmail.com (A. Nag)

restoration and conservation [4,7-12]. This could assist in addressing the adverse effects of the mine's closure, such as relocating local populations and the economic ramifications [4,11,13-14]. As a result, cultural tourism that uses, protects, and interprets the significance of mining relics is classified as geotourism [15-16] and mining tourism in the literature.

Rybar [17] defines mining tourism as adventure tourism in which travelers experience new feelings and experiences while visiting underground mining locations. According to Kršák et al. [18], mining tourism combines technological, industrial, and cultural legacy to create a cognitive/educational experience-oriented tourism [4]. Several abandoned mines may offer appealing features and educational, cultural, and technological value, such as accessible mine galleries, open pits, and industrial structures. Structures can be appropriately modified for recreational, scientific, and tourist reasons [19-21]. Frameworks such as Edwards and iCoit [22], for example, propose an analysis model of mining sites from functional and experiential viewpoints, spotlighting their ability to host varied tourism narratives [4]. Several such models have been designed to approach the evaluation of former mining sites systematically or to assess the value of geosites or geomorphosites. These models are appealing to professionals in geomorphology, protecting and conserving geoheritage, and responsible authorities [23-31]. According to Rybar [17], Kubalikova [32], and Ghosh, Mukhopadhyay and Chatterjee [33], the following are essential factors to consider: the uniqueness of the site and its objects, the conditions of the site and its objects, the accessibility of the site, existing scientific and professional publications, the availability of information, visual value, the value of the service provided, and individual objects found at the site (Figure 1) [4]. These factors also assist officials, people, and visitors in understanding the relevance and potential of a mining site for future development, including mining tourism. While they allow in economic revitalization stages of heritage and tourism, post-mining and industrial heritage do not often work as simple-minded economic-geographical explanations toward a positive impact on the local communities. It has been asserted by the researchers that scale, perhaps not merely the top-down versus bottom-up conflict but with an awareness of scale as socially constructed and fluid, largely remains absent from such ongoing discussions in tourism and heritage studies. Scale frequently manifests as an organizing unit or a well-defined policy differentiation in natural and cultural heritage conservation [34-35].

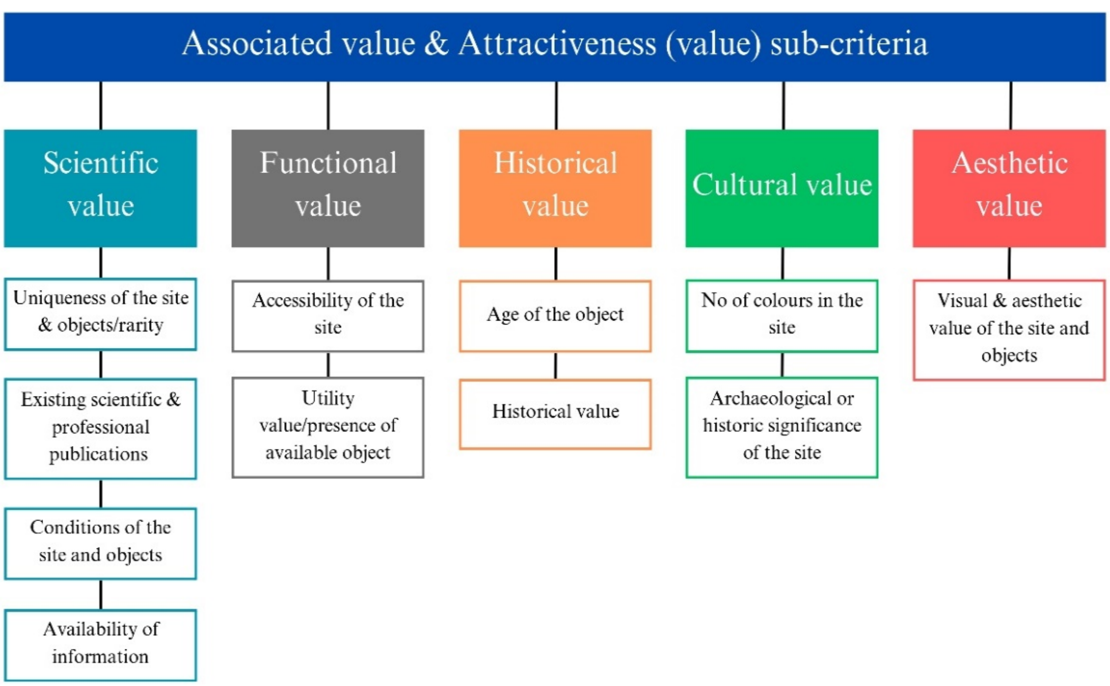


Figure 1. Schematic framework of associated value (e.g., uniqueness, accessibility, interpretive quality) and attractiveness sub-criteria for mining heritage sites (Source: Author's visual synthesis based on models by Rybar, 2010; Kubalikova, 2013; Ghosh, Mukhopadhyay, and Chatterjee, 2021; Oktay Vehbi et al., 2022)

To identify community and regional goals and try to achieve them, transparent, hierarchical, and inclusive management strategies are required when dealing with WHS in particular [2, 36-38]. The difficulties of merely using "community-based" management strategies within multi-scalar governance contexts [36] are highlighted by some work, such as Odede, Perry, and Hayombe [38], which examines community-based organizations in the management of Kit Mikayi Shrine in Kenya. However, researchers think that more theoretical foundations around the idea of scale itself may provide the flexibility and applicability required to assess and, in turn, manage trans-scalar and trans-spatial WHSs as well as other heritage sites with similarly complex geographies.

The tourism regeneration potential of two post-mining heritage sites (MHSs) in India, namely Dhori Mines in Jharkhand and Barr Conglomerate in Rajasthan, is empirically studied in the backdrop above. The sites are analyzed under ecological restoration, visitor perception, and strategic intervention. The study develops and applies AI-assisted heritage interpretation tools, data-driven visitor engagement best practices, and community-aligned development models. Descriptive analysis, one-sample t-test, Kolmogorov-Smirnov test for distribution validity, chi-square test for categorical association, and hierarchical clustering for visitor segmentation are being used to analyze the tourist perception and site performance. All these aspects concern sustainability practices and efforts toward conservation. The study thus identifies actionable insights and best practices to feed into future strategies for the sustainable development of post-mining landscapes as resilient heritage tourism destinations.

2. Literature Review

2.1. Destination Competitiveness Models

Over the recent years, competitiveness has become a critical lens through which to view cultural and heritage tourism. Especially historical destinations repurposed from industrial landscapes ought to develop a distinctive competitive advantage so that they may remain viable in a saturated tourist economy. Especially mining sites have to be refurbished and repositioned to cater to niche and generalist visitor cohorts [39]. Since 1979, the World Economic Forum (WEF) has measured competitiveness as “the combination of institutions, the laws therein, and the prevailing conditions that determine the level of production of a country” [39-40]. While the term goes back to productivity, different disciplinary perspectives emphasize different aspects of competitiveness in their definitions.

Despite the fast-paced evolution of tourism, competitiveness remains an underexplored factor in long-term sustainability for cultural sites [39-41]. This becomes even more profound for post-mining sites that have to straddle the heritage conservation and economic revitalization for sustained community benefit [4]. Studies show that an approach to culture conservation that focuses on culture as a resource at the exclusion of the larger context of regional economic development generally ends in economic stagnation [42]. Contrastingly, possibilities brought forward in terms of adaptive reuse of mining landscapes have exhibited a positive influence on economic sustainability and attractiveness for tourism—thus contributing to the advent of industrial heritage tourism (IHT) [39-42].

Heritage management paradigms have shifted from the protection of isolated monuments to embracing landscape approaches that consider intangible values, spatial context, and inter-regional linkages [43]. In this respect, environmental and institutional enablers are now increasingly considered essential to destination competitiveness, especially in emerging economies that show the greatest potential for heritage tourism [4]. Pereira Roders and Van Oers [44] stress that cultural heritage research can evolve into place-based competitiveness at both international and national levels. Likewise, Mariotti [45] and Dugulan, Popescu, and Vegheş [46] argue that competitiveness is a primary framework in safeguarding the long-term viability of the travel and tourism (T&T) industry.

According to García-Almeida and Gartner [47], external pressures—for example, the loss of authenticity or overtourism—can negatively impact the competitive appeal of sites thus requiring new approaches for the sustainable marketing of heritage destinations [48]. Specifically, MHSs have the dual task of preserving the authenticity of their post-industrial narratives while simultaneously upgrading their infrastructural and interpretive facilities to meet current expectations of visitors [49]. Competitiveness, however, is not an undividable concept—it is both relative (against what?) and multidimensional (what dimensions mattered?) [50]. As countries move from resource-based to knowledge-based economies, the criteria for competitiveness shift accordingly [51-52]. For industrial heritage landscapes, the transition inculcates the need to instill innovation and resilience in tourism development strategies. Despite an extensive literature, a consistent model of tourism competitiveness, let alone one conceived specifically for heritage landscapes, is still lacking [53]. Instead, several schools of thought give the issue different priority schemes or performance indicator sets, as detailed in Table 1.

Table 1. Primary Schools of Thought on Competitiveness (Source: Author's compilation)

Perspective	Key Theorists	Definition & Focus	Relevance to Industrial Heritage Tourism
Comparative advantage and/or price competitiveness perspective	[54-63]	Emphasizes natural resources (such as location, climate, and cost advantages) as a destination's primary sources of competitiveness. Economic aspects like cost-effectiveness and affordability are essential in deciding how appealing a place is.	Industrial heritage sites can draw tourists by utilizing their historical authenticity, pre-existing infrastructure, and distinctive landscape elements. The economic viability of reusing former industrial locations contributes to sustainable tourism growth.
Strategy and management perspective	[58,64-79]	It highlights how crucial managerial decision-making, firm-specific capabilities, and strategic planning are in preserving competitiveness. It is believed that innovation, operational effectiveness, and good management techniques all contribute to competitiveness.	Strategic destination management, investments in improving the visitor experience, and creative marketing strategies are necessary to turn industrial heritage sites into tourist destinations. Strong governance frameworks and public-private partnerships also influence long-term competitiveness.
Historical and socio-cultural perspective	[80-86]	Draws attention to how historical and cultural elements influence a destination's ability to compete. Emphasizes identity, the preservation of cultural heritage, and the socio-political environment in which tourism functions.	As historical and cultural icons, industrial heritage sites provide opportunities for immersive storytelling that increase visitor engagement. Cultural programming, community engagement, and heritage interpretation enhance the site's allure and support the expansion of sustainable tourism.

Each school of thought sheds light on MHT differently. Economists tend to emphasize the cost and resource advantages [54-63] while management theorists place emphasis more on strategy, innovation, and operational performance parameters [58, 64-79]. Sociologists emphasize historical identity, governance, and the socio-political fabric underpinning tourism destinations [80-86]. Each field tends to suggest different indicators for competitiveness, but hardly any truly address the hybrid nature of post-industrial heritage landscapes [40-41, 87-88]. On its very core, competitiveness is regarded as promoting the quality of life and income levels for local communities [39]. In this sense, MHT serves as instruments through which post-mining areas can be reintegrated into regional economies, transforming the usually considered environmental liabilities into culturally viewed and economically productive destinations [89-90]. Yet, references to competitiveness tend to privilege competitive advantage over comparative advantage [41]. This paper underscores that two kinds of advantages must be considered for the valuation of MHSs. Comparative advantage is related to location, environment, and natural remnants of industrial activity, while competitive advantage involves added value—interpretive infrastructure, models of governance, and visitor facilities. As the tourism literature has suggested, heritage destinations do not "consume" in the traditional sense their primary attraction as do resource-based sectors [39-41, 91-92]. Accordingly, competitive positioning within mining heritage tourism (MHT) must simultaneously retain place-specific authenticity and create new visitor experiences [89]. Although there is an immense body of literature on tourism competitiveness, few of these frameworks are explicitly employed in the mining heritage landscape in the Global South. Buildings on this gap, the study integrates visitor perception data with competitiveness indicators customized to post-industrial settings. This study enhances extant literature by providing an integrated competitiveness assessment based on visitor perception, digital heritage tools, and spatial diagnostics to fill the gap in those models that do not adequately portray the complex realities of post-mining tourism destinations.

2.2. Cultural and Industrial Heritage Tourism

Industrial Heritage Tourism (IHT) pertains to tourist activities and industries clustered around man-made sites, buildings, and landscapes that have been sculpted by past industrial processes [93]. Industrial sites, once seen as obsolete, are today increasingly viewed as being instrumental for the revitalization and economic reorientation of particular regions within the former industrialized regions [41, 93-95]. This has also led to emergence of what have come to be known as "landscapes of nostalgia," through which rustbelt cities and defunct mines are being reconceived as heritage sites [39-40, 96-97]. These may include the physical remains—such as machinery, industrial buildings, and transport systems—along with the intangible industrial culture of worker housing, regional traditions, and oral histories [90]. The just-in-time deindustrialization of many economies, along with weakening ties to more manual trades and stronger ties to automation, has bred a growing public interest in industrial memory and identity [89, 97]. Visitors now find those sites to provide a dual function of nostalgic and educational experience, whether it is at surface-level infrastructure such as factories or underground ones like mine tunnels [89].

Yet, the actual worldwide occurrence of this transformation is neither at all universal nor without problems: The preservation of Lowell, Massachusetts in the United States [98], interpretative challenges at the Mining Museum in South Wales [12], competing local interests in Bolivia [99], and conflicted urban images in post-industrial Britain [100]. Successful IHT cases comprise the Ironbridge Gorge Museum in England [101], Scottish whisky distilleries as green tourist sites [102], and the conversion of old mines and quarries for tourism [93, 103-104]. In cities such as Birmingham, IHT has been conceived as a balancing act between economic redevelopment and multicultural and social goals [105]. This, in turn, is an indication of the rising prominence of IHT as a socioeconomic and cultural phenomenon [89-90, 106]. When they work well, such projects reinstate local pride, nurture place-based identity, and challenge negative stereotypes that stigmatize the locality as degenerate and derelict [106]. Hence, IHT is in many ways envisaged as a "new combination" strategy to help market territories and thereby reinstate dignity to landscapes that have been stigmatized in the past [107]. The economic stage is, however, still inconsistent with achieving the full potential of the IHT. Tourism revenues rarely come close to replacing the steady base of employment once provided by industrial operations [93]. Furthermore, the conversion of industrial precincts into consumption-oriented spaces is associated with cultural displacement or stakeholder conflict, especially when different actors (e.g., state, private sector, local community) weigh objectives differently [9, 90]. Although tourism is sometimes advocated for as a remedy to economic restructuring [89, 106, 108], it is by no means the solution. Opponents question why an overwhelming preoccupation with economic utility obscures cross-cutting cultural and ecological issues [41, 89-90, 106]. Despite having a rich praxis, there remain limited systematic academic evaluations of the impact of IHT activities, especially in relation to local well-being, identity, and environmental regeneration [39-41]. Whereas numerous studies refer to successes or challenges regarding stand-alone case studies, very few manage to generalize a framework for cross-site or policy-level application. Consequently, this study aims to fill this gap by offering comparative, empirical-based insights into how varied industrial heritage transformation methods influence tourism outcomes in post-mining landscapes.

Alfrey and Putnam [110] claim that the use of any new function must respect the integrity of the site in the sense that the redevelopment should serve education, conservation, and public memory [111-114]. Stratton [115] further supports this position by emphasizing that incremental, conservation-based regeneration is best when viewed in relation to the integration of built, landscape, and community resources [113-114]. A key objective in IHT is to establish a uniquely authentic, creative, and locally participatory “sense of place” [116]. This need came about from the post-1960s heritage ideologies standing against demolition-oriented regional planning in historic industrial domains [117-118]. However, preservation questioned how to weight cultural value against functional reuse and economic imperatives [40]. Wherein conflicts arise between preservationists who emphasize the safeguarding of the historical fabric and developers or officials who emphasize the gains from tourism [119]. Therefore, industrial heritage projects are multidimensional in character, shaped by intersecting economic, social, emotional, and political forces [89]. Key recurring issues in the IHT research reflect these complexities:

1. Adaptive Reuse and Regeneration: In IHT success, the old industrial assets are creatively reused for tourism, cultural, or educational purposes while conserving historical authenticity.
2. Identity and Localization: Industrial sites' transformation can foster local identity and pride if community narratives drive its regeneration.
3. Economic Revitalization and Limitations: Industrial tourism, classified as an economic activity, may not compensate for lost industrial jobs; if it does so at all, it provides

unsatisfactory employment and that too, on a seasonal basis.

4. Stakeholder Conflicts and Planning Needs: Conflicting stakeholder interests of governments, heritage bodies, investors, and communities need to be reconciled through transparent planning with an element of participation.
5. Perception and Marketing of Industrial Sites: At the core of industrial tourism is the metamorphosis of social perception toward former industrial zones from perceived dilapidated spaces into attractive destinations for tourists.
6. Environmental Sustainability: Ecological restoration essentially must form part of the long-term sustainability, especially for those that have undergone post-mining with land and water degradation.

While these themes are recurrent, few empirical studies put contrasting site approaches within one framework. Accordingly, the study fills this gap via dual-site evaluation in India. Hence, the present study advances the IHT discourse by providing empirical analysis. It focuses on how ecological restoration, community engagement, and digitization coalesce in the tourism competitiveness of post-industrial landscapes in India. Transformation depends on other factors besides infrastructure investment: on how narratives of industrial memory are constituted and shared and on the role of the local community in the process.

2.3. Sustainability in Heritage Tourism

While tourism promotes economic development in many countries, it can also place enormous social and environmental pressures [120]. This fact has come to be seen with scholars and policymakers in recommending that the sector acknowledges its externalities and pursues responsible growth models [121-122]. Hence, considerable demand for sustainable tourism paradigms has been generated, whereby the destinations and stakeholders aim to alleviate tourism's harmful impacts while preserving its economic benefits [123-124]. However, in spite of its rising profile, sustainable tourism remains a fractured concept with no universally accepted definition to really sit alongside that of sustainable development itself [125-126]. The World Tourism Organisation (WTO) positions sustainable tourism as a tourism that strives for balance between ecological integrity, cultural authenticity, social equity, and economic viability. While this promotes a long-term view, it is also laden with neoliberal ideology that places growth of industries and market-led conservation approaches above all else [127-129]. As argued by Loulanski & Loulanski [130], sustainability in heritage tourism, especially cultural heritage tourism (CHT), needs to move beyond mere rhetoric to truly integrate protection of cultural resources as a useful tool in mediating between economic intents and heritage conservation. Excessive weight given to the economic dimension traditionally tends to commodify cultural heritage, which fosters resource overexploitation, displacement of local communities, and social inequities [130-134]. In the more considerable risks of exploitation that industrial heritage tourism (IHT) would face, many sites are environmentally degraded, and a lot of restoration and adaptive reuse is required before they can be considered for tourism [89-90]. Thus, in the context of sustainable tourism, environmental restoration wouldn't only be required; correctly grounded visitor management and interpretation strategies must be in place.

Recent scholarship now has brought concerns of intergenerational and intragenerational equity at its focal point to state that cultural tourism development must take into consideration environmental, social, and institutional considerations in the long run [134]. The policies today increasingly call for the protection of biodiversity, the reduction of resource use, social inclusion, and the protection of tangible and intangible heritage [132]. The institutional foundations for sustainability in CHT, however, have not yet been sufficiently explored. If institutional capacity continues to be cited as one of the key success factors [125,130], very few analyses investigate in detail how governance systems, sets of rules, or coalitions of stakeholders promote or hinder the actual implementation of sustainable development principles [130]. As this fragmentation across disciplines has left a tranche of questions unanswered: To what extent do the present-day sustainability strategies in CHT account for mechanisms being institutionalized? Which actors constrain or enable sustainability transitions at the post-industrial heritage sites? [35]. Whereas numerous studies do cast light onto CHT definitions, issues of authenticity, or tourist preferences [35, 44-47, 134], the intertwined struggles of actors-opportunities-power relations on one hand, and local participation and regulatory frameworks interplay on the other still have scarcely been studied. The commercialization of cultural heritage for tourism creates several pressures that threaten the sources of authenticity. This is but one tension of relevance for IHT, for industrial ruins may often be sterilized and sanitized or rebranded. [35]. This modification is often at odds with the very identity these places attempt to maintain [39-41]. Hence, a crucial aspect that has to be dealt with, supporting tourism by funding from tourism while maintaining the cultural integrity and the historical narratives, is going to be passed onto sustainable industrial heritage tourism. Li et al. [35] are evidenced by the regional tensions between tourism development and the protection of cultural relics. They claim that tourism can be developed as a channel for heritage protection, particularly when government funding for conservation is minimal.

Community engagement is cited as an important enabler of sustainable tourism. Nicholas and Thapa [135] concluded, in their study of the Piton Management Area, that environmental attitudes, dependence on tourism, and level of participation together shaped support for sustainable practices within the community. Haukeland [136] stresses that the only sustainable option is collaborative governance, where stakeholders co-create and co-manage heritage strategies. For IHT, this means tourism development must be informed by local knowledge and ownership to ensure that the narratives represent lived experience and regional identity. The participatory approach is therefore highly relevant in former mining landscapes, where collective memory and traumas linked to the environment generally coexist. Nonetheless, although promising, this relationship between tourism and sustainability remains complicated and, at times, contradictory. Much of the literature considers policy recommendations or singular case studies. However, much remains to be studied in terms of integrated models or cross-sectoral lessons. This opens the door for further exploration of sustainability-oriented management frameworks, especially for IHT. The field needs strategies that consider:

1. Economically viable or, without commodifying history;
2. Environmental restoration in line with the legacies of industry;
3. Cultural stewardship grounded in authenticity and local agency.

Most of the literature emphasizes policy objectives, and so in effect, little integration is made between sustainability, perceptual data, and ecological performance at post-mining sites. This study fills these gaps by interrogating how ecological recovery, institutional fit, and community participation determine the sustainability trajectory of two MHSs in India. In this way, it brings to the fore the need for integrated systems of tourism geared toward sustainability to maintain historical relevance while negotiating modern ecological and economic realities.

2.4. AI and Machine Learning in Heritage Tourism Management

Artificial Intelligence (AI) has taken up the significant task of integrating tourism into the computer industry with data-driven policymaking, visitor personalization, and conservation workflow [137]. Heritage tourism enhancement is another pathway through which AI creates new ways for value creation, immersive interpretation, and predictive maintenance in overall operational management and ensuring visitor satisfaction [90,137]. One of the most profound implications is in enhancing visitor experiences. AI chatbots interact with tourists to provide real-time, personalized historical information, adjusting the delivery of content to suit the tourists' preferences and styles of learning [137]. With NLP, guides that speak multiple languages and are context-aware simulate human discourse, allowing for easier access to site-specific information. AR/VR devices help visitors to visualize historical reconstruction and foster a feeling of attachment to the disappeared or highly degraded industrial environment [89-90, 138].

Further, machine learning (ML) models are used in conservation, particularly with respect to heritage building monitoring. Drones and computer-vision systems powered by AI assess the structural integrity of heritage buildings, detect the emergence of micro-cracks, and monitor environmental wear in regions inaccessible to humans [139]. With this in place, the emphasis shifts from reactive conservation to preventive conservation through predictive analytics, whereby site managers prioritize interventions and allocate scarce resources efficiently and effectively. This is especially so with fragile post-industrial landscapes, wherein deterioration tends to be subtle and spatially dispersed. Besides conservation processes, AI advances and optimizes destination placements. Analyzing histories of visitor flow from site to site, the algorithms can propose infrastructure placement, crowd-control strategies, and safety protocols so that tourists are smoothly and fairly dispersed amongst these sensitive sites [140]. These applications promote the intents of sustainable tourism, like managing carrying capacity and lessening site degradation. However, pressing ethical questions still emerge. Questions of privacy, algorithmic bias, digital exclusion, and cultural representation must be tackled should the introduction of AI be applauded for equity, inclusion, and authenticity [90]. Previously AI systems could have been set to give priority to narratives of supremacy or in undertaking such actions marginalize community voices unless consciously designed with diverse stakeholders embedded in the process. Data gathering practices and facial recognition also legitimately raise alarms about surveillance and consent. To become really influential, AI application in heritage tourism must be catered for by interdisciplinary collaboration—technologists, heritage planners, the local community, and ethicists. It is to guide the furtherance of cultural traditions through modern computational means [137]. Research today concentrates on social and technological feasibility or engagement with tourists [27] and above all governance frameworks or local adaptation strategies in the heritage context. There is still no clear understanding of how AI can align with values imposed on an industrial heritage site by a place and community-led narratives. Over-standardizing digital experiences or the coarse reduction of extremely nuanced histories into algorithmic outputs is seemed to be the agiler of all context-sensitive design. This paper does not ignore these tensions but examines how AI tools can support not only operating efficiency but also working with site authenticity and promoting participatory tourism narratives. Most of the research about heritage tourism related to AI focuses on urban monuments or museums. This paper provides one of the rare analyses of the applicability of AI in rural post-extractive industrial landscapes. It accentuates AI's potential to serve heritage not as an obstacle to heritage but rather as a transformation from past to the present if an ethical integration is maintained. As AI technologies continue evolving, this situation is certainly going to continue whereby AI will be increasingly applied in heritage tourism from dynamic storytelling to smart interpretation hub to adaptive management systems. Coming to terms with adoption does not have a straightforward answer. The innovation should not be a threat to the unique cultural contexts, but must indeed be supportive of culture.

3. Methodology

The mixed-methods study comprehensively assesses destination competitiveness in MHT by integrating qualitative and quantitative methodologies. The empirical framework allows multi-faceted evaluations of the selected destinations by including voices from stakeholder and visitor perspectives. Given that heritage tourism is extensive and complex, engaging in expert interviews and systematically employing surveys allows for as thorough an examination as possible of the interconnectivity concerning visitor experiences, conservation efforts, and tourism development (Figure 2). This approach of employing multi-layered data collection offered clustered levels of assurance of a solid basis for empirical validation. The study recruited respondents by non-stratified purposive sampling through selection of tourists and stakeholders available during the research period. The sampling method could achieve the minimum target of 400 valid survey responses per site (Dhori and Barr Conglomerate). Visitors were approached on-site to be surveyed at the entry/exit points, interpretation zones, and community locations such as cafes and parking spaces. Data collection was carried out at varying times of day and days of the week to ensure that the profile of responses was as diverse as possible. Initial structured visiting research at the sites, capturing over 400 respondents each, was used to assess people's perceptions of authenticity, infrastructure quality, and participation levels. The survey design allowed open-ended questions for qualitative information on their subjective experience and preferences concerning sites versus Likert scale responses for quantitative analyses. A pilot survey of the instrument was administered with thirty respondents from each site and reviewed by experts in heritage management, with further linkages to data quality. The agents conducted the bilingual survey in English and Hindi, where the responses were rendered anonymous to reduce bias in desirability. It can use systematic, objective measures to assign weights to the satisfaction levels of visitors to the destination and, of course, is essential for modeling intentions. In contrast, statistical comparisons will also presumably be made to those data. To examine the strategy's effectiveness, financial benefits, and challenges in preserving cultural assets, stakeholders were interviewed alongside tourist civil workers, local businesspeople, and conservation professionals. Because they highlighted the governance concerns, management limitations, and sustainability opportunities that the surveys would have missed, these interviews were crucial in helping to frame the interpretation of the quantitative results and focus attention on the socioeconomic effects of MHT.

SPSS and other software were subjected to sophisticated statistical techniques with great analytical rigor. The 46 variables apart from visitor demographics analyzed included stakeholder attitude, site-specific infrastructure, and tourism marketing effectiveness [see Table 5 in Annexure, where Ecological Variables (A3-A9, A15) focus on land rehabilitation success; Infrastructure Variables (A14-A19, A32) measure visitor comfort and safety; Cultural Variables (A2, A11, A44) assess heritage interpretation quality; Economic Variables (A30, A45) gauge local community benefits; Safety Variables (A22, A42-A43) evaluate risk management systems]. The methods have been espoused on the grounds of being able to capture the perspectives of stakeholders and evaluate the behavior of visitors. A one-sample t-test was then employed to compare the means of the visitor satisfaction scores to pre-specified benchmarks to establish whether the perceived quality of tourism is meeting expectations. This also permits essentially comparing infrastructure and service delivery in-depth while quantitatively measuring differences in perceptions of visitors across different locations. Chi-square tests were then applied to identify variables affecting tourism dynamics at the sites while investigating relationships between categorical variables, including visitor demographics, travel reasons, and travel behavior. Distributional characteristics of stakeholder perceptions and satisfaction levels of visitors were analyzed by applying other methods using probability charts and histograms. Before using inferential statistics, this supported normalcy assumptions and provided a clear visual representation of data trends. The tourists could thus be clustered into distinct market groups based on their purchasing behavior, interests, and levels of involvement in tourism, with the dual objective of enhancing the quality of tourism management planning and targeting marketing campaigns more effectively. The visitor arrival patterns and seasonal trends were simulated using the Poisson distribution and the sample Kolmogorov-Smirnov (K-S) test, which had significant implications for demand forecasting, visitor flow prediction, and the prediction of peak tourism seasons. In addition, Bartlett spectral density estimation was applied to examine temporal trends of visitation that would yield information on seasonality and long-term change in the attraction appeal of the sites considered. These results support evidence-based decision-making on tourism policy formulation and the management of historical sites. Though all statistical analyses were performed with 95% confidence intervals, limitations in data do exist. These include possible selection bias from non-random survey sampling, recall bias of responses from visitors, and a pre-monsoon timing of the survey, which might not capture full seasonal variation. Accessibility limitations for elderly or disabled visitors also limited participation, which may affect generalizability of outcomes. These limitations were considered in interpreting outcomes to avoid drawing over-reaching conclusions for the study.

The basis for conducting these analyses hinged upon the necessity of a thorough, multifaceted evaluation of MHT. The qualitative data derived from stakeholders offers contextual insight into governance, policy pressure, and conservation issues. The link between these qualitative findings and the quantitative statistical model integrated into the study serves to test hypotheses and determine causative relationships. This research identifies market segmentation and visitor behavior by integrating stakeholder interviews, hierarchical clustering, and visitor surveys—information essential to support destination marketing and management actions. Using data from different sources enhances the validity and reliability of the results, providing a broad assessment of MHT. Triangulation of qualitative interviews, perception surveys, and statistical analysis makes outcomes more robust and minimizes single-method bias. This empirical-based approach will thus assist in the competitive positioning and sustainable development of mining heritage destinations with actionable information for policy-makers, tourism authorities, and conservationists.

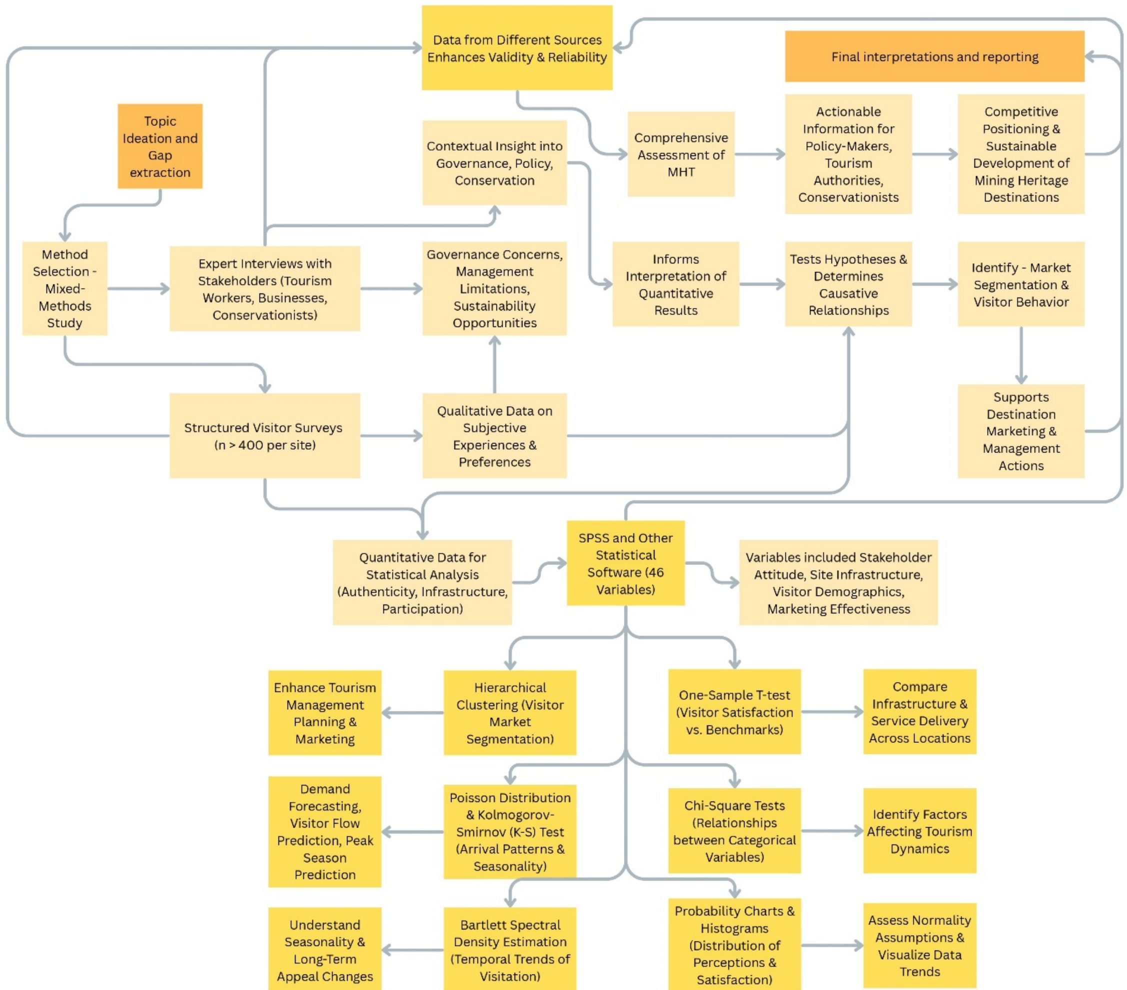


Figure 2. Methodological flowchart outlining sequential stages: site selection, visitor perception survey, ecological assessment, statistical analysis, and clustering (Source: Author)

4. Case Studies and Empirical Findings

A field examination reveals how MHT initiatives can go a long way in giving the firm a competitive edge in tourism. It also supports one case study of selected MHSs, judging the approaches to heritage conservation, visitor engagement, infrastructure development, and the sustainability practices of the said case study area. By comparing such case studies, the study identifies best practices and challenges that may influence the future sustainability of MHT. These case studies provide an empirical understanding of how the modalities that form policy interventions, technology innovations, and community involvement mold the success of heritage tourism initiatives. The chosen case study research areas are Dhori Mines and Barr Conglomerate, primarily based on their historical significance, variable tourism approaches, and different intended developmental trajectories for the destination. Dhori Mines has an ancient industrial past and is located in a very early phase of adaptation to tourism, where conservation and infrastructure development are critical if competitiveness is achieved. On the other hand, the Barr conglomerate is more advanced, showing how community-driven tourism models are coupled with high levels of digital innovations, providing a different perspective on technology. These two sites provide a comparative framework to show how different contextual factors are likely to affect the success of MHT.

4.1. Dhori Mines

Dhori Mines, located within the mineral-laden state of Jharkhand, represents one of the last vestiges of the coal mining history of India and is currently being considered for transformation into a heritage tourism destination (Figure 3). The study relies on 441 survey responses with attributes spread over 46 perceptual variables concerning issues like environment reclamation, heritage significance, infrastructural condition, and post-mining multi-functionality. The dataset exhibited high internal consistency with reliability established by a Cronbach's Alpha of 0.801 for descriptive and structural analyses (Table 2).

Table 2. Reliability analysis using SPSS 16.0 of Dhori Mines (Source: Author)

Case Processing Summary			
		N	**%**
Cases	Valid	441	100.0
	Excluded[a]	0	0.0
	Total	441	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
0.801	46

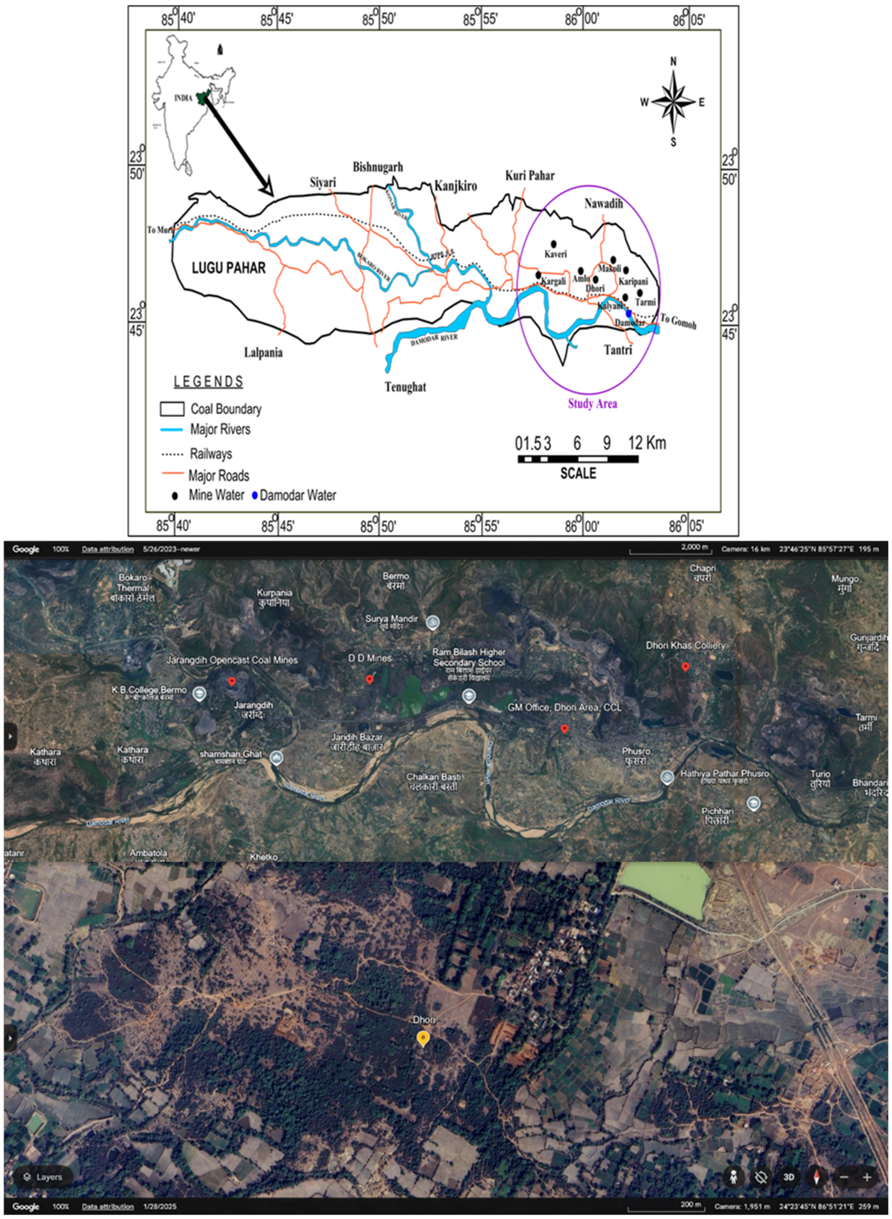


Figure 3. Location map of Dhori Mines (Jharkhand), showing spatial context, surrounding transport linkages, and settlement boundaries. Data visualized using Google Earth (Source: Author's Compilation)

A one-tailed sample t-test was performed on the post-reclamation value against an assumed mean of 5, described as "very satisfied" or ideal. The t-tests returned consistently negative, statistically significant t-values ($p<0.001$) against all variables, suggesting stakeholder dissatisfaction with reclamation results (see Table 6 in Annexure). Mean satisfaction scores were between 3.23 and 3.67, indicating slightly below-average satisfaction or mild to moderate dissatisfaction for issues related to ecological stability, shape of the land, access, safety, and long-term usability after reclamation. Spectral frequency techniques for deeper analysis of variable A46 (relating to multi-functionality of reclaimed landscape) reveal a concentration of low-to-mid response frequency indicative of polarized perceptions; some accept it as partially re-used, others either express uncertainty or outright disapproval, with a left-skewed histogram peaking around 3 (Figure 4). This median suggests stakeholders are not neutral or satisfied; they tilt toward being dissatisfied with the site's capacity to absorb a variety of functions and post-mining-support activities proposed so far, including recreation, conservation, or agriculture.

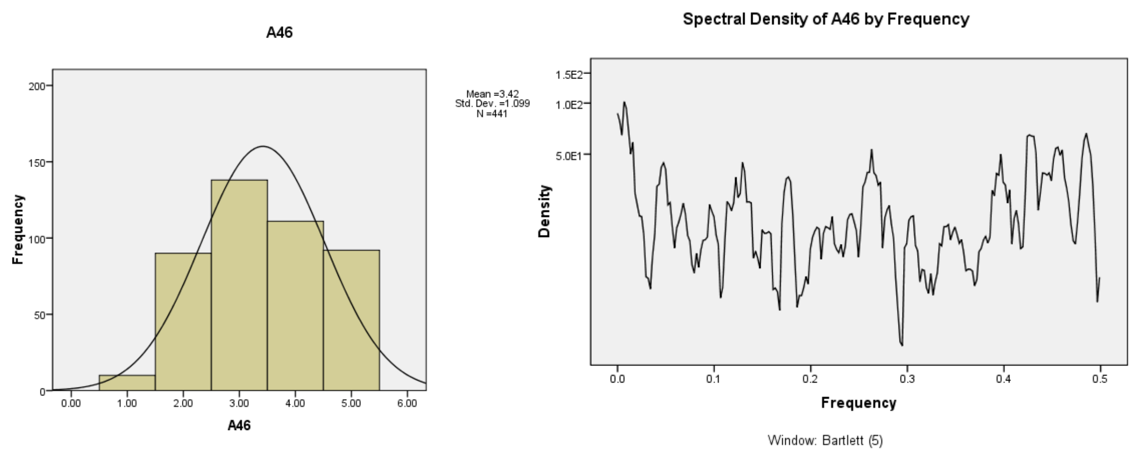


Figure 4. Histogram and spectral frequency distribution of key visitor perception indicators for Dhori Mines (n = 441). Generated using SPSS 16.0 to assess normality of response patterns (Source: Author)

These observations, plus others in the study, were validated spatially by satellite images: scattered vegetation, abandoned pits, and intersecting water bodies, coupled with uneven terrain, all point to poor and disorderly reclamation (Table 3). The other variables scoring low in the survey, such as A20 (aesthetics), A29 (land usability), A36 (ecological value), and A42 (visitor safety), are found to be strongly correlated with the observations made visually. Indicators of low community stewardship and social disengagement appear in areas of barely human interaction. Interestingly, 82% of respondents acknowledged Dhori's historic significance, but there was a wave of discontent toward the lack of infrastructure supporting stories, such as interpretive panels, guided trails, and immersive exhibits. This mismatch between expectation and reality was strengthened through a Chi-square analysis ($\chi^2 = 18.76$, $p < 0.01$), concluding that the older generations tended to prize heritage stories. At the same time, the younger cohorts felt entitled to dislike it for the absence of tech-driven or participatory formats (see Table 7 in Annexure).

The ecological profile is no brighter. Even without a formal Environmental Impact Assessment (EIA), satellite-based land cover analysis estimates show that almost 68% of the area is ecologically degraded. Massive obtruding overburden dumps, disconnected water bodies, and sparsely vegetated areas stand out. These physical attributes correspond directly to low stakeholder ratings on reclamation effectiveness, also evidenced by the lower quartile scores of the related survey items. Infrastructure became another major hindrance. Fifty-six percent of respondents observed the absence of basic amenities, namely shelter, adequate signage for wayfinding, sanitary facilities, and pedestrian-safe zones (see Figure 7 in Annexure). Structural Equation Modeling ($\chi^2 = 4.32$, $p < 0.05$; RMSEA = 0.04) confirmed that infrastructure quality significantly affects visitor satisfaction. Even stakeholders with a historical interest voiced their discontent when rudimentary amenities were missing. The interpretation of satellite imagery corroborated these findings, displaying informal pathways, unmarked demarcation of the site, and the lack of adequate signage, thereby affecting accessibility and perceived safety. On digital engagement, though being aware of the venue, this has not succeeded in converting occasional visits into frequent visits or participative engagements. Cluster analysis identified three core visitor typologies: (1) heritage tourists, (2) laid-back regional visitors, and (3) ecologically conscious viewers. However, none of these groups felt entirely satisfied, implying the need for diverse engagement processes. The One-Sample Kolmogorov-Smirnov Test reaffirmed that the dataset was non-normal, with all 46 variables showing p-values = .000 (see Table 8 in Annexure). The Z-scores' average was 5.583, while the maximum difference was from 0.17 to 0.28. The dataset indicated moderate skewness and heteroscedasticity, and the means clustered at 3.47 with standard deviations between 0.92 and 1.31. These features indicate that forecasting or predictive modeling would use non-parametric models or robust regression methods (e.g., Poisson or exponential decay models) as a better option. The Proximity Matrix deepened the understanding of the cluster and dimensional reduction analyses. The matrix clarified the degree of alignment among different survey items in the perception space. For example, items A1, A2, A3, and A4 indicated indeterminately zero distances from one another, suggesting that they expressed almost the same stakeholder sentiments (see Table 9 in Annexure). On the contrary, distances of 1.105E3 from A1 to A5 or 1.564E3 from A8 to A29 implied opposite perceptions, thus helping segregate and pinpoint isolated experiences or domain-specific displeasures. Dhori's reclamation history remains incomplete, ecologically vulnerable, and socially undesirable. While its historical context remains essential, the lack of infrastructure, biological integrity, and participation for its transformation into a sustainable heritage tourism landscape eradicates anything appealing. With strategic, inclusive, and interdisciplinary means, Dhori-land can be transformed from an extraction memoryscape to a multifunctional, publicly accessible land.

Table 3. Satellite Imagery Integration and Ground Perception Alignment of Dhori Mines (Source: Author)

Observed Feature / Variable Set	Mean Score Trend	Satellite Imagery Insight	Interpretation Based on Ground Survey and Perception Scores
A1–A4 (Visual Quality)	~3.47	Sparse green patches, exposed soil	Locals perceive the visual transformation as incomplete
Green Tracts	~3.29–3.44	Fragmented and scattered vegetation patches	Indicates partial afforestation efforts; aligns with moderate scores in ecological indices
A5–A8 (Ecological Health)	~3.29–3.44	Mono-species plantations, minimal biodiversity	Ecological benefits appear minimal and unsustainable
Canopy Cover	-	Limited tree density, especially in peripheral zones	Confirms stakeholder concerns about visual and ecological degradation
Barren Patches	-	Persistent bare earth and overburden remnants	Visually reinforces low terrain stability and poor post-mining land adaptability.
A10–A19 (Accessibility & Terrain Stability)	~3.28–3.67	Disconnected green tracts, few pathways	Area is difficult to navigate or access, deterring visits
Access Routes	-	Disjointed or undefined paths, lack of wayfinding elements	Correlates with poor infrastructure perception (A14, A32) and survey complaints
A20–A29 (Waterbody Integration)	~3.24–3.53	Poorly integrated pit lakes, limited adaptive reuse	Public remains hesitant to accept or use these features
Water Bodies	-	Sparse and poorly integrated	Incomplete pit lake rehabilitation supports low scores in A20 and A29.
A30–A40 (Afforestation, Soil, Livelihoods)	~3.24–3.67	Barren zones, limited mixed-species vegetation	Landscape not yet biodiverse or economically productive
Mixed-Use Zones	-	Very few mixed-function zones were detected.	Echoes low multi-functionality scores (A46); supports call for integrated land-use design
A41–A46 (Social Integration & Long-term Use)	~3.23–3.56	Lack of visible community use zones	Site lacks social anchoring or long-term community use
Human Activity Indicators	-	Low spatial density of structures or active zones	Mirrors dissatisfaction in social and community indicators (A5–A8, A36, A42)

4.2. Barr Conglomerate

The Barr conglomerate in Pali, Rajasthan, conjures a very excellent post-mining scenario with ecological restoration at the minimum level of anthropic interference. It is set in a semi-arid area and has transformed from an extractive to a regenerating landscape with dryland vegetation, natural contour restoration, and site-wide regrading. Unlike larger-scale coal mine reclamation practices that mostly resort to structured ecological engineering, Barr's journey has primarily been shaped by local hydrological adaptation, micro-terrain changes, and passive regrowth (Figure 5).

The study probes into perceptual resonance associated with the reclamation process by collating 46 perceptual variables (A1 to A46) from 440 respondents. It encompasses a range of concerns, from ecological restoration and safety, routed through interpretive clarity and socio-cultural utility. The average mean standard score across all these variables was 4.87, indicating a generally favorable perception of post-reclamation conditions at the site. High-ranking variables-A1 (visual quality), A3 (soil stability), A4 (erosion control), A6 (vegetation cover), and A15 (terrain compatibility)-indicated that the site was perceived unanimously in terms of environmental coherence. Such responses imply that visual and physical indicators of the overall ecological health are key determinants in a layperson's assessment of reclamation success. Besides, Cronbach's Alpha value of 0.962 confirmed the internal consistency of the data set; thus, all 46 variables reflect user perceptions as a whole (Table 4).

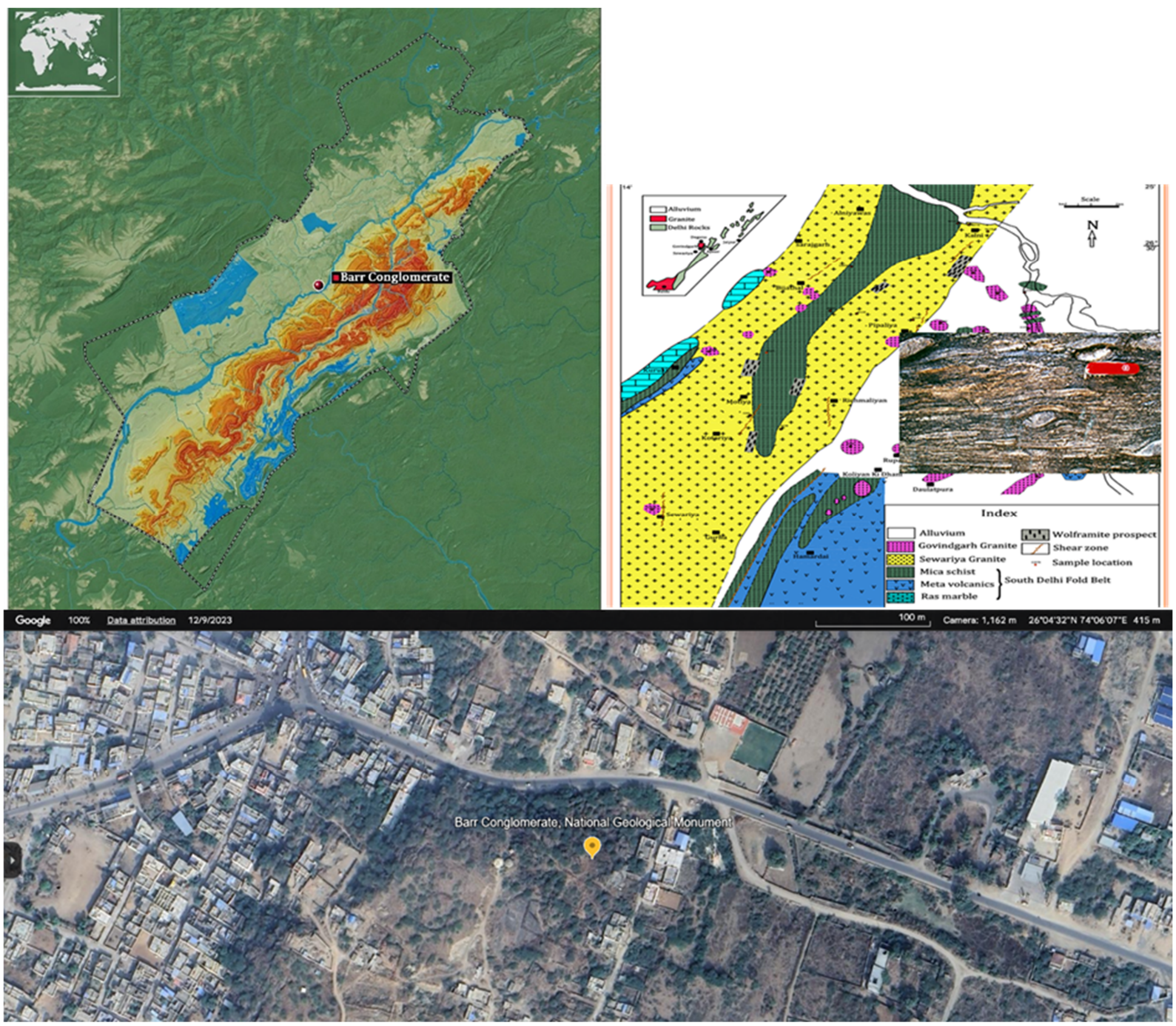


Figure 5. Location map of Barr Conglomerate Mines (Rajasthan), depicting site boundaries, surrounding terrain, and settlement interface using Google Earth (Source: Author's Compilation)

Table 4. Reliability analysis using SPSS 16.0 of Barr Conglomerate Mines

Case Processing Summary			
		N	%
Cases	Valid	440	100.0
	Excluded[a]	0	0.0
	Total	440	100.0
a. Listwise deletion based on all variables in the procedure.			
Reliability Statistics			
Cronbach's Alpha		N of Items	
0.962		46	

One-sample t-tests were done on each variable to test the assumption that the means of the variables were significantly greater than the neutral Likert scale point of 3.5. The null hypothesis of no significant positive perception was rejected for 41 out of 46 variables. Therefore, the respondents were not just relieving their conscience; they firmly believed the changes were improvements (see Table 10 in Annexure). Supported by strong statistical evidence were variables A13 (overall satisfaction), A32 (navigability), and A42 (safety), while somewhat weaker evidence was found for A5 (soil productivity), A24 (digital signage), and A30 (livelihood generation). The noticeable difference is that while improving physical and ecological features is acknowledged, perceptions about socio-economic and interpretative amenities remain low. On a complementary note, the Kolmogorov-Smirnov (K-S) test was used to assess whether variable responses followed a normal distribution, as required for the validity of t-tests. At a 95% confidence level, this showed that 43 out of the 46 variables passed, further reinforcing the strength of the findings. Variables that did not pass the K–S test, such as A11 (identity), A24 (technology access), and A39 (recreational prospects), seemed to reflect polarized opinions or some perceptual ambiguity from users (see Figure 8 and Tables 11 and 12 in Annexure).

These perceptual trends were also validated through satellite image analysis. Around 53% of the site's surface area was seen to have moderate to dense vegetation, and 21 % was seen to have exposed or high-albedo zones concentrated along seasonal drainages and the edge of dump mounds. These observations corroborate with those on perceptual sowing, especially a few that received high ratings by users, giving weight to the statements on A3 (soil stability), A4 (erosion control), and A6 (vegetation). The spectral analysis revealed that low-albedo, moisture-retaining zones were more concentrated in recontoured areas and old gullies, which indirectly indicates the success of their passive rehabilitation strategy (Figure 6). This strong correspondence between user perception and satellite confirmations lends empirical significance to the perception-driven approach.

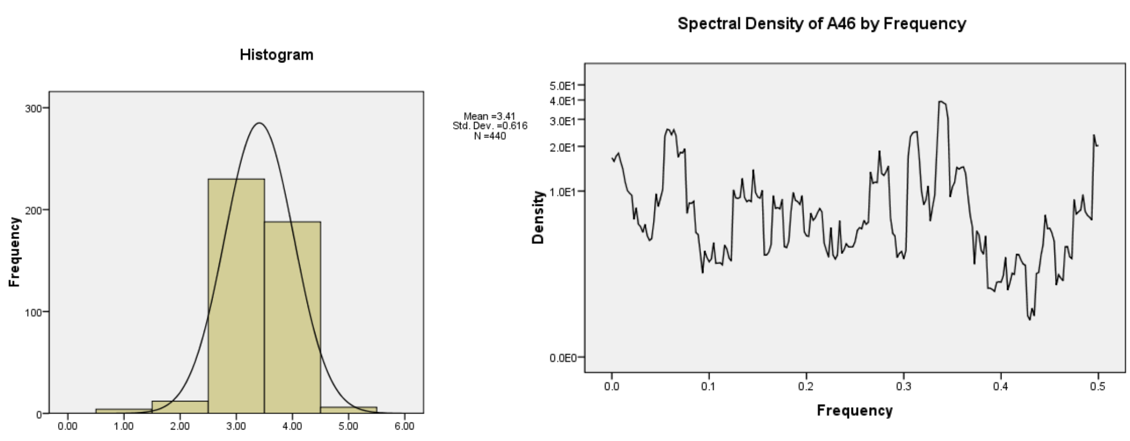


Figure 6. Histogram and spectral frequency distribution of key visitor perception indicators for Barr Conglomerate Mines (n = 440). Analysis conducted in SPSS 16.0 to verify data distribution (Source: Author)

To understand the relationships among variables, a Proximity Matrix was constructed using Pearson correlation coefficients (see Table 13 in Annexure). In this case, the matrix yielded three center themes. The first cluster revolved around ecological integrity, which combined A3 (soil stability), A4 (erosion control), A6 (vegetation), A7 (natural drainage), and A15 (terrain compatibility), all of which registered high mutual correlations ($r > 0.7$). Thus, it suggests that the respondents think of some variables as being cognitively connected into a shared schema of “ecological success.” The second cluster dealt with safety and movement, where variables such as A32 (navigability), A42 (safety), A13 (satisfaction), and A46 (adaptive reuse) showed moderately to strongly correlated relationships (r = 0.6-0.72) with safety and satisfaction correlated with ease of movement, showing that in this case, functionality, and legibility in space are critical for comfort. The third cluster considered socio-cultural and technological factors, where variables such as A24 (digital interface), A30 (livelihood), A34 (community interaction), and A44 (interpretive signage) exhibited moderate correlations (r = 0.4-0.6), indicating that these concerns are acknowledged but are not yet solidly grounded in the transition of the site. Other variables, especially A2 (narrative clarity), A11 (identity linkage), and A39 (water recreation), were weakly correlated with all clusters ($r < 0.3$), which could indicate perceptual fragmentation, or non-existence, of a coherent user experience within these domains.

The general findings suggest that the ecological viability of the Barr Conglomerate's reclamation is both visually recognized and obscure. Yet, its social usefulness, binding sense of identity, and technical integration remain largely insufficient. The ecological dimension has robust foundations that remain unbalanced by cultural or economic experiences. Interventions must now work on turning ecological capital into socio-cultural activity. Various possibilities include creating community-design interpretive zones to activate A2 and A11, conducting agro-ecological pilot programs to piggyback A5 and A30, and introducing water-sensitive urban design features to fulfil A39. These processes would begin converting the site from a restored landscape to a lively and multifunctional public asset.

5. Comparative Analysis

According to the comparative analyses, the Dhori site and the Barr conglomerate pit have quite different post-mining landscape transformation strategies rooted in institutional, ecological, and sociocultural contexts. The Dhori site is marked with some semi-formalized visitor engagement with tourism infrastructure, as signposts, pathways, and a type of heritage story are exhibited, but not very inspiringly executed. Visitors complained of a disconnection between the spatial layout and the storytelling, echoing the observations made by Sahoo and Debnath [141] on fragmented experiential flows in post-industrial landscapes. Barr continues to provide excellent visible environmental recovery and organic terrain restoration, but it lacks any interpretation or tailored experience to entice visitors. Further consistent with the framework proposed by Dobbie and Green [142] on sensory-driven aesthetic appreciation in post-extractive ecologies, in which such unstructured landscapes could prophetically inspire deeper emotional and perceptual resonance within the beholder, Barr provides an organic habitat restoration and, above it, visible environmental recovery and proof. Thus, in heritage interpretation, Dhori would benefit from having a recognized formal coverage under the BCCL legacy site programme, whereby it has thematic boards, markers of industrial heritage, and a partial chronology of coal history. Apart from this, though, it can convey less complex socio-ecological mining narratives that Jigyasu [143] and the ICOMOS India Charter describe due to the lack of collaborative curation and poorly presented static formats. Dhori has none of those things at all. On the other hand, Barr is meaningless; despite the ecological maturity and spatial legibility being evident, the mining heritage is silent. As a result, it suggests a lost opportunity to transform environmental memory into a cultural one—a problem that is frequently brought up in discussions about heritage [144].

From the perspective of infrastructural quality, Dhori presents the observer with the basic framework of a destination that is prepared for tourists. There is no basic amenity of restrooms, shaded rest areas, or refreshment zones that reduce the possibility of sustaining engagement with visitors over a more extended period, while internal access roads, fencing, and observation decks stand in place. Such insights mirror those of Mishra et al. [145] on 'infrastructural lag' in single-industry towns transitioning into heritage landscapes. Barr has minimal infrastructure and is strictly informal: vehicle trails and goat paths are available, and no other dedicated facilities exist. Open terrain and a low-intervention reclamation strategy keep the site functionally accessible [89]. Paradoxically, its absence of built infrastructure adds to its 'rewilded' identity articulated by Solnit [146] as a form of post-industrial sublimity removed from formal tourism containment.

The contrasting environmental influence of the two sites is most striking. In Dhori, reclamation is predicated upon engineered contouring, linear plantation drives, and topsoil restoration, which creates a gorgeously green but ecologically homogenized landscape. This is an approach that Gunderson and Holling [147] have heavily criticized, warning against resilience models that forget native succession processes. In contrast, Barr serves as a slow, successional ecological recovery via native shrubland, spontaneous vegetation regrowth, and evidence for gully and watershed reformation in satellite imagery. Its zones of low albedo indicate a stable vegetative cover, strengthening the arguments made by Leinfelder, Iramina, and Eston [148] among others in favor of allowing post-mining sites to self-organize into new ecological entities as opposed to forcing immediate aesthetic normalization.

Judging marketing effectiveness, on the one hand, benefits Dhori slightly: it is featured in internal circulars and sporadic tourism brochures and has limited references in academic literature. However, its external visibility is virtually nil, and stakeholder interviews revealed no targeted outreach or digital footprint. This reflects institutional inertia outlined by Jamal and Stronza [149], where mining PSUs work in a closed-loop communication system. Barr, on the contrary, is non-existent on any formal marketing channels. The only visibility in the local knowledge base is through occasional visits by environmental scholars to the site. While this minimizes tourism prospects, it simultaneously protects the site from over-commercialization—something that scholars in favor of slow tourism and low-carbon destination development [150] view positively.

Lastly, here, community interactions constitute the most significant difference. The reclamation of Dhori and the transformation of its legacy were led mainly by external technical elites, with little input from the community on design, implementation, or tourism planning. There is little evidence of local employment or cultural integration. This is characteristic of what has often been criticized by Areeparampil [151] as the disconnection of technical planners from the local population in coal-belt rehabilitation schemes. Barr starkly contrasts this: in theory, in the absence of any planning, community interaction is much higher. Locals continue with seasonal grazing, water harvesting, and cultural rituals on the land, whereupon informal stewardship can be inferred. Ingold [152] refers to this notion as a dwelling perspective, whereby people relate to landscapes through use and memory and seasonal rhythms instead of designations or signage.

The Dhori site encompasses a strongly defined and institutionalized approach to reclamation that seeks heritage performance through curatorial interventions but lacks ecological depth and community engagement. On the contrary, the Barr conglomerate illustrates a bottom-up landscape matured ecologically and used by the community with minimal infrastructural or heritage exegesis. The paths diverging from these two illustrate the need for hybrid strategies to balance the interpretive depth and institutional access of sites like Dhori with ecological authenticity and community grounding of sites like Barr. Thus, future planning should take the best of both worlds, considering spatial storytelling, ecological rewilding, and participatory design as mainstays for post-mining heritage landscapes.

6. Discussion and Best Practices

The comparative analysis between the Dhori site in Jharkhand and the Barr conglomerate site in Rajasthan brings forward some key dimensions influencing the success of post-mining landscapes as sustained tourism sites. These findings constitute an instruction to be observed as best practices by policymakers, heritage planners, and reclamation authorities in replicating and scaling such models elsewhere.

An integrated heritage conservation and tourism planning process is a prime question of success. The analysis indicates that ad-hoc or fragmented approaches to site reclamation and reuse have resulted in underused spaces, as in Barr, or disappointing heritage narratives, as in Dhori. What is required now is policy synergy between environmental restoration, heritage interpretation, and tourism-related development. The literature, as represented by the works of Jigyasu [143] and Sahoo and Debnath [141], further delineates that when heritage conservation is regarded not as an afterthought but rather as an intrinsic part of mine closure and post-extractive planning from the very beginning, the sustainable management of sites is most easily achieved. This involves spatial zoning, memory-based narrative techniques, and ecological/cultural resource allocation.

Second, community-centric approaches for economic development significantly govern the outcomes of the sites. Barr demonstrates an informal management model that permits natural community interaction through ongoing land-use practices, seasonal rituals, and adaptive reuse, in contrast to Dhori's more top-down institutional legacy reclamation effort that lacks mechanisms for participatory design or local economic integration. Literature on the subject [144, 151] frequently stresses local stewardship, livelihood inclusion, and cultural continuity as critical to the long-term sustainability of such landscapes. Despite being driven by tacit knowledge, the Barr model bears relevance to the strength of grounded, locally embedded practices.

AI and digital innovation for improved visitor engagement is a progressive idea suggesting that AI interpretation tools, immersive AR and VR experiences, and app-based guided tours could greatly benefit Dhori. They not only fill the gaps in site interpretation but also provide a personalized experience for visitors, boosting retention and satisfaction. As the new literature on innovative heritage [153] suggests, AI bridges static heritage and dynamic visitor expectations when laced with local narratives and real-time data analytics [154-155].

The analysis holds insights on the importance of data-driven decision-making. Employing one-sample t-tests, Kolmogorov-Smirnov tests, and hierarchical clustering within this study enabled the multifaceted evaluation of variables such as visitor satisfaction, perception of the site environment, and adequacy of infrastructure. The periodic application of analytics and visitor feedback systems would greatly benefit sites like Dhori, without an instrumental data-tracking system. The empirical mechanisms would assist in optimizing spatial planning and monitoring ecological thresholds while also allowing for adaptive provisions based on seasonal trends or demographic shifts, as per the adaptive management paradigm proposed by Gunderson and Holling [147].

Lastly, the study identifies segmentation-based strategy implementation as an emerging mandatory best practice. Results from the proximity matrix and hierarchical clustering analysis underscore the heterogeneous character of visitor expectations and usage patterns. Rather than a one-size-fits-all design-and-programming regime, site managers must pursue differentiated strategies towards establishing zones and experiences in alignment with specific visitor segments: heritage buffs, nature adepts, academic researchers, or a mix of the two. This enhances engagement and distributes pressure off sites, thus protecting sensitive zones while ensuring a balanced management of footfall. Such insights, therefore, correspond to market-responsive planning models suggested in sustainable tourism literature [149-150].

Thus, juxtaposing Dhori's structured yet institutionally heavy development with Barr's organic community-linked evolution presents a fertile ground for learning. The success of post-mining landscape management depends on strategically balancing heritage valorization, ecological restoration, and participatory governance with technological innovation, each guided by robust empirical frameworks [156-158]. These realized and adapted best practices can serve as a transformative tool in the reclamation of industrial scars into resilient, multifunctional heritage landscapes.

7. Conclusions

Through strategic tourism planning, this study provides empirically supported insights into the transformative potential of mining heritage landscapes. Comparing the Barr Conglomerate site in Rajasthan and the Dhori mining site in Jharkhand makes the case for site-specific interventions supported by segmentation analysis, statistical validation, community collaboration, and technology integration to reposition post-extractive sites into sustainable heritage tourism destinations. The key contribution of the study is how visitor segmentation and clustering may assist in managing the sites. From proximity matrices and hierarchical clustering algorithms, visitor typologies emerged according to their drivers of satisfaction, preferences, and engagement levels. Knowledge about their needs allows for the creation of differentiated engagement strategies, including customized interpretation experiences; marketing targeted toward different audiences; and zoned areas offering activities tailored to eco-tourists, cultural heritage patrons, and local history buffs.

Further, the research reveals the hidden potential of AI tools and digital heritage platforms. While neither site has yet seen full application, this study reveals their capacity to greatly improve interpretation, tailor visitor experiences, and automate either feedback or crowd management, particularly in an under-resourced context like Dhori. Thus, from a digital point of view, augmenting becomes more than mere novelty: it becomes a scalable substitute for unavailable and costly physical infrastructure. Another equally pressing issue is that of community-centered approaches. The comparative findings indicate that the Barr might generate better tourist satisfaction and socio-economic outcomes while engaging local stakeholders more actively, thus adding favor to the contention that tourism development should be based on institutional frameworks that encourage local participation in skill formation and being in line with regional economic schemes, such as the District Mineral Foundation (DMF).

From a methodological perspective, the employment of one-sample t-test and Kolmogorov-Smirnov statistics rendered the posed analysis more statistically robust. Such tools came in handy as well when it came to testing satisfaction with infrastructure, with interpretive quality, and with the overall visitor experience. The application of such techniques as part of an ongoing performance-monitoring framework could lead to gendered policy responsiveness and accountability in heritage site governance. The other limitations are: the non-stratified sample technique may have introduced some bias in representation of the visitors and may limit extensive generalisation; secondly, seasonal effects may have played a role in perceptions; thirdly, the implementation of artificial intelligence and other digital tools depends on infrastructure investment, policy-level buy-in, and digital literacy—that is beyond the scope being looked at in this study. Hence, forthcoming research will include examining visitor behavior longitudinally and across seasons, the experimental installation of AI interpretive systems at pilot sites, and performance evaluations of post-mining tourism models in a comparative cross-country manner.

This study thus calls for a structured, four-pillar approach; that is, combining visitor analytics, digital innovation, institutional engagement, and community participation toward the redefinition of MHT. Such a strategy can position the MHT as a functional vehicle for inclusive regeneration, place-making, and cultural continuity, rather than as some token reclamation gesture. On a policy level, regulatory frameworks must begin evolving to institutionalize these components so that stakeholders are able to view post-mining landscapes as resilient, experiential, and culturally embedded destinations rather than as islands of industrial decay.

Ethical Approval

The survey was conducted per the norms of the governing institute and heritage authorities, Birla Institute of Technology, Mesra, and ASI.

Consent to Participate

Informed verbal consent was obtained from the participants (due to limited interaction time) during the anonymous surveying for data collection and utilisation of the survey data for research and publication.

Consent to Publish

Informed verbal consent was obtained from the participants (due to limited interaction time) during the anonymous surveying for data collection and utilisation of the survey data for research and publication.

Data Availability Statement

The survey data will be made available upon request, and the rest of the data utilised have been cited in the text.

Authors Contributions

AN – original writing, revision, conceptualisation, and data collection.

Funding

A part of this work was supported by the Department of Science and Technology – Inspire (grant number IF210191, 2022), Ministry of Science and Technology, Government of India.

Competing Interests

The authors declare no conflict of interest.

References

[1]. James, L., & Winter, T. (2017). Expertise and the making of World Heritage policy. *International Journal of Cultural Policy*, *23*(1), 36-51.

[2]. Lwoga, N. B. (2018). Dilemma of local socio-economic perspectives in management of historic ruins in Kilwa Kisiwani World Heritage Site, Tanzania. *International Journal of Heritage Studies*, *24*(10), 1019-1037.

[3]. Tomíšková, M. (2011). Průmyslové dědictví a cestovní ruch. *Urbanismus a územní rozvoj. Č*, *3*, 28-32.

[4]. Oktay Vehbi, B., Mısırlısoy, D., Günçe, K., & Yüceer, H. (2022). The tourism potential of post-mining

heritage sites: The Cyprus mining cooperation in Lefka, Cyprus. *Geoheritage*, *14*(2), 58.

[5]. Conesa, H. M. (2010). The difficulties in the development of mining tourism projects: the case of La Unión Mining District (SE Spain). *PASOS. Revista de Turismo y Patrimonio Cultural*, *8*(4), 653-660.

[6]. Jelen, J. (2018). Mining heritage and mining tourism. *Czech Journal of Tourism*, *7*(1), 93-105.

[7]. Jolliffe, L., & Conlin, M. (2010). Lessons in transforming mines into tourism attractions. In *Mining heritage and tourism* (pp. 263-270). Routledge.

[8]. Hewison, K. (1987). National interests and economic dozvnturn: Thailand.

[9]. Harris, G. G. (1989). Concepts of individual, self, and person in description and analysis. *American anthropologist*, *91*(3), 599-612.

[10]. Chon, K. S., & Evans, M. R. (1989). Tourism in a rural area—a coal mining-county experience. *Tourism Management*, *10*(4), 315-321.

[11]. Dicks, B. (2000). *Heritage, place and community*. University of Wales Press.

[12]. Wanhill, S. (2000). Mines—A tourist attraction: Coal mining in industrial South Wales. *Journal of travel research*, *39*(1), 60-69.

[13]. Cohen, E. (1985). The tourist guide: The origins, structure and dynamics of a role. *Annals of tourism research*, *12*(1), 5-29.

[14]. Cohen, E. (1988). Authenticity and commoditization in tourism. *Annals of tourism research*, *15*(3), 371-386.

[15]. Hose, T. A. (2007). Geotourism: appreciating the deep time of landscapes. In *Niche tourism* (pp. 27-37). Routledge.

[16]. Hose, T. A. (2012). Geotourism and geoconservation. *Geoheritage*, *4*(1), 1-5.

[17]. Rybár, P. (2010). Assessment of attractiveness (value) of geotouristic objects. *Acta geoturistica*, *1*(2), 13-21.

[18]. Kršák, B., Sidor, C., Štrba, Ľ., Molokáč, M., Hvizdák, L., Blišťan, P., ... & Mesároš, P. (2015). Maximizing the potential of mining tourism through knowledge infrastructures. *Acta Montanistica Slovaca*, *20*(4), 319-325.

[19]. Wirth, P., Chang, J., Syrbe, R. U., Wende, W., & Hu, T. (2018). Green infrastructure: a planning concept for the urban transformation of former coal-mining cities. *International Journal of Coal Science & Technology*, *5*, 78-91.

[20]. Wrede, V., & Mügge-Bartolović, V. (2012). GeoRoute Ruhr—a Network of Geotrails in the Ruhr Area National GeoPark, Germany. *Geoheritage*, *4*(1), 109-114.

[21]. Ballesteros, E. R., & Ramírez, M. H. (2007). Identity and community—Reflections on the development of mining heritage tourism in Southern Spain. *Tourism management*, *28*(3), 677-687.

[22]. Edwards, J. A., & i Coit, J. C. L. (1996). Mines and quarries: Industrial heritage tourism. *Annals of tourism research*, *23*(2), 341-363.

[23]. Pralong, J. P. (2005). A method for assessing tourist potential and use of geomorphological sites. *Géomorphologie: relief, processus, environnement*, *11*(3), 189-196.

[24]. Serrano, E., & González-Trueba, J. J. (2005). Assessment of geomorphosites in natural protected areas: the Picos de Europa National Park (Spain). *Géomorphologie: relief, processus, environnement*, *11*(3), 197-208.

[25]. Pereira, P., Pereira, D., & Caetano Alves, M. I. (2007). Geomorphosite assessment in Montesinho natural park (Portugal). *Geographica helvetica*, *62*(3), 159-168.

[26]. Reynard, E., Fontana, G., Kozlik, L., & Scapozza, C. (2007). A method for assessing" scientific" and" additional values" of geomorphosites. *Geographica Helvetica*, *62*(3), 148-158.

[27]. Zouros, N. C. (2007). Geomorphosite assessment and management in protected areas of Greece Case study of the Lesvos island–coastal geomorphosites. *Geographica helvetica*, *62*(3), 169-180.

[28]. Bruschi, V. M., Cendrero, A., & Albertos, J. A. C. (2011). A statistical approach to the validation and optimisation of geoheritage assessment procedures. *Geoheritage*, *3*, 131-149.

[29]. Vujičić, M. D., Vasiljević, D. A., Marković, S. B., Hose, T. A., Lukić, T., Hadžić, O., & Janićević, S. (2011). Preliminary geosite assessment model (GAM) and its application on Fruška Gora Mountain, potential geotourism destination of Serbia. *Acta Geographica Slovenica*, *51*(2), 361-376.

[30]. Fassoulas, C., Mouriki, D., Dimitriou-Nikolakis, P., & Iliopoulos, G. (2012). Quantitative assessment of geotopes as an effective tool for geoheritage management. *Geoheritage*, *4*, 177-193.

[31]. Štrba, L., & Rybár, P. (2015). Revision of the “Assessment of attractiveness (value) of geotouristic objects”. *Acta Geoturistica*, *6*(1), 30-40.

[32]. Kubalíková, L. (2013). Geomorphosite assessment for geotourism purposes. *Czech Journal of Tourism*, *2*(2), 80-104.

[33]. Ghosh, A., Mukhopadhyay, S., & Chatterjee, S. (2021). Assessment of geoheritage and prospects of geotourism: An approach to geoconservation of important geological and geomorphological sites of

Puruliya district, West Bengal, India. *International Journal of Geoheritage and Parks*, *9*(2), 264-283.

[34]. Battisti, C., & Fanelli, G. (2015). Don't think local! Scale in conservation, parochialism, dogmatic bureaucracy and the implementing of the European Directives. *Journal for Nature Conservation*, *24*, 24-30.

[35]. Li, H., Chen, J., Ikebe, K., & Kinoshita, T. (2023). Survey of Residents of Historic Cities Willingness to Pay for a Cultural Heritage Conservation Project: The Contribution of Heritage Awareness. *Land*, *12*(11), 2058.

[36]. Olya, H. G., Alipour, H., & Gavilyan, Y. (2018). Different voices from community groups to support sustainable tourism development at Iranian World Heritage Sites: evidence from Bisotun. *Journal of Sustainable Tourism*, *26*(10), 1728-1748.

[37]. Salazar, N. B. (2007). Towards a global culture of heritage interpretation? Evidence from Indonesia and Tanzania. *Tourism Recreation Research*, *32*(3), 23-30.

[38]. Odede, F., Perry, B., & Hayombe, P. (2022). Community-based organizations in Kisumu: a necessary but not sufficient condition for managing polyvalent heritage landscapes. In *Landscape As Heritage* (pp. 40-55). Routledge.

[39]. Nag, A., & Mishra, S. (2023). Stakeholders' perception and competitiveness of heritage towns: A systematic literature review. *Tourism Management Perspectives*, *48*, 101156.

[40]. Nag, A., & Mishra, S. (2023). Destination competitiveness and sustainability: Heritage planning from the perspective of the tourism industry stakeholders. In *Cases on traveler preferences, attitudes, and behaviors: Impact in the hospitality industry* (pp. 1-32). IGI Global.

[41]. Nag, A., & Mishra, S. (2023). Unlocking the power of stakeholder perception: Enhancing competitive heritage planning and place-making. In *Exploring culture and heritage through experience tourism* (pp. 196-226). IGI Global.

[42]. López-Guzmán, T., Vieira-Rodríguez, A., & Rodríguez-García, J. (2014). Profile and motivations of European tourists on the Sherry wine route of Spain. *Tourism Management Perspectives*, *11*, 63-68.

[43]. Veldpaus, L., Pereira Roders, A. R., & Colenbrander, B. J. (2013). Urban heritage: putting the past into the future. *The Historic Environment: Policy & Practice*, *4*(1), 3-18.

[44]. Pereira Roders, A., & Van Oers, R. (2011). Bridging cultural heritage and sustainable development. *Journal of Cultural Heritage Management and Sustainable Development*, *1*(1), 5-14.

[45]. Mariotti, A. (2012). Local system, networks and international competitiveness: From cultural heritage to cultural routes. *Almatourism-Journal of Tourism, Culture and Territorial Development*, *3*(5), 81-95.

[46]. Dugulan, D., Popescu, I. C., & Vegheş, C. (2010). Cultural Heritage, Travel And Tourism, And Sustainable Development: An Exploratory Assessment Of Their Current Relationships. *REVISTA ECONOMICĂ*.

[47]. García-Almeida, D. J., & Gartner, W. C. (2021). A model of competitiveness in intangible cultural heritage tourism destinations from the knowledge-based view. *Acta turistica*, *33*(1), 7-37.

[48]. Abeysinghe, A. R. G. M. I., & Ariyawansa, R. G. (2017). Competitiveness of Kandy City as a Heritage Tourist Destination in Sri Lanka.

[49]. Guo, S., Yang, S., & Liu, C. (2024). Mining Heritage Reuse Risks: A Systematic Review. *Sustainability*, *16*(10), 4048.

[50]. Spence, A. M., Hazard, H. A., Fellow, R., & Kennedy, J. F. (1988). International competitiveness. *The International Executive*, *30*(1), 32-34.

[51]. Mohamed, B. H., Ari, I., Al-Sada, M. B. S., & Koç, M. (2021). Strategizing human development for a country in transition from a resource-based to a knowledge-based economy. *Sustainability*, *13*(24), 13750.

[52]. Somoza-Medina, X., & Monteserín-Abella, O. (2021). The sustainability of industrial heritage tourism far from the axes of economic development in Europe: Two case studies. *Sustainability*, *13*(3), 1077.

[53]. Porter, M. E. (2001). Enhancing the microeconomic foundations of prosperity: the current competitiveness index. *The global competitiveness report*, *2002*, 52-73.

[54]. Bellak, C. (1992). Towards a flexible concept of competitiveness.

[55]. Cartwright, W. R. (1993). Multiple linked" diamonds" and the international competitiveness of export-dependent industries: The New Zealand experience. *MIR: Management International Review*, 55-70.

[56]. Rugman, A. M., & D'Cruz, J. R. (1993). Strategic management, networks, and international competitiveness. *Competitiveness Review: An International Business Journal*, *3*(2), 3-8.

[57]. Hodgetts, R. M. (1993). Porter's diamond framework in a Mexican context. *MIR: Management International Review*, 41-54.

[58]. Porter, M. E. (1990). New global strategies for competitive advantage. *Planning review*, *18*(3), 4-14.

[59]. Rugman, A. M., & Anderson, A. (1990). The Dispute Settlement Mechanisms' Cases in the Canada-

United States Free Trade Agreement: An Economic Evaluation. *Geo. Wash. J. Int'l L. & Econ.*, *24*, 1.

[60]. Fagerberg, J. (1988). International competitiveness. *The economic journal*, *98*(391), 355-374.

[61]. Hilke, J. C., & Nelson, P. B. (1988). US international competitiveness: evolution or revolution?. *(No Title)*.

[62]. Durand, M., & Giorno, C. (1987). Indicators of international competitiveness: conceptual aspects and evaluation. *OECD economic studies*, *9*(3), 147-182.

[63]. Fakiolas, T. (1985). Basic causes of Soviet industry's low international competitiveness. *Journal of Economic Studies*, *12*(5), 39-52.

[64]. Rugman, A. M., & D'Cruz, J. R. (1993). Strategic management, networks, and international competitiveness. *Competitiveness Review: An International Business Journal*, *3*(2), 3-8.

[65]. Mahmoud, E., Rice, G., & Anders, G. (1992). Quality improvement programs: Tools for international competitive advantage. *The International Executive*, *34*(4), 305-320.

[66]. Powell, T. C. (1992). Organizational alignment as competitive advantage. *Strategic management journal*, *13*(2), 119-134.

[67]. Powell, T. C. (1992). Research notes and communications strategic planning as competitive advantage. *Strategic management journal*, *13*(7), 551-558.

[68]. Mathur, S. S. (1992). Talking straight about competitive strategy. *Journal of Marketing Management*, *8*(3), 199-217.

[69]. Mahoney, J. T., & Pandian, J. R. (1992). The resource-based view within the conversation of strategic management. *Strategic management journal*, *13*(5), 363-380.

[70]. Grant, R. M. (1991). Porter's 'competitive advantage of nations': an assessment. *Strategic management journal*, *12*(7), 535-548.

[71]. Yip, G. S. (1989). Global strategy... in a world of nations. *Sloan management review*, *31*(1), 29-41.

[72]. Day, G. S., & Wensley, R. (1988). Assessing advantage: a framework for diagnosing competitive superiority. *Journal of marketing*, *52*(2), 1-20.

[73]. Peters, T. (1988). Restoring American competitiveness: Looking for new models of organizations. *Academy of Management Perspectives*, *2*(2), 103-109.

[74]. Gbosbal, S., & Kim, S. K. (1986). Building effective intelligence systems for competitive advantage. *Sloan Management Review (1986-1998)*, *28*(1), 49.

[75]. Kogut, B. (1985). Designing global strategies: Comparative and competitive value-added chains. *Sloan Management Review (pre-1986)*, *26*(4), 15.

[76]. Porter, M. E. (1985). Technology and competitive advantage. *Journal of business strategy*, *5*(3), 60-78.

[77]. Porter, M. E. (1999). Michael Porter on competition. *The Antitrust Bulletin*, *44*(4), 841-880.

[78]. Porter, M. E., & Millar, V. E. (1985). How information gives you competitive advantage.

[79]. Parsons, G. L. (1983). Information technology: a new competitive weapon. *Sloan Management Review (pre-1986)*, *25*(1), 3.

[80]. Porter, M. E., Delgado, M., Ketels, C., & Stern, S. (2008). Moving to a new global competitiveness index. *The global competitiveness report*, *2009*, 43-63.

[81]. Franke, R. H., Hofstede, G., & Bond, M. H. (1991). Cultural roots of economic performance: A research notea. *Strategic management journal*, *12*(S1), 165-173.

[82]. Aaker, D. A. (1989). Managing assets and skills: The key to a sustainable competitive advantage. *California management review*, *31*(2), 91-106.

[83]. Bond, M. H. E. (1988). *The cross-cultural challenge to social psychology*. Sage Publications, Inc.

[84]. Hofstede, G. (1980). Culture and organizations. *International studies of management & organization*, *10*(4), 15-41.

[85]. Hofstede, G. (1983). The cultural relativity of organizational practices and theories. *Journal of international business studies*, *14*, 75-89.

[86]. Kennedy, D. (1987). Islands of white: Settler society and culture in Kenya and Southern Rhodesia, 1890-1939.

[87]. Chang Moon, H., & Peery Jr, N. S. (1995). Competitiveness of product, firm, industry, and nation in a global business. *Competitiveness Review: An International Business Journal*, *5*(1), 37-43.

[88]. Waheeduzzaman, A. N. M., & Ryans Jr, J. K. (1996). Definition, perspectives, and understanding of international competitiveness: A quest for a common ground. *Competitiveness Review: An International Business Journal*, *6*(2), 7-26.

[89]. Nag, A., & Rathore, A. S. (2025). Tourism in Conflict Zones Strategies for Competitiveness in Mining Heritage Cities. *Journal of Mining and Environment*.

[90]. Nag, A., & Mishra, S. (2024). Revitalizing mining heritage tourism: A machine learning approach to tourism management. *Journal of Mining and Environment*, *15*(4), 1193-1225.

[91]. Crouch, G. I., & Ritchie, J. B. (1995). *Destination competitiveness and the role of the tourism enterprise* (pp. 95-19). University of Calgary. Faculty of Management.

[92]. Ritchie, J. B., & Crouch, G. I. (1993). *Competitiveness in international tourism: A framework for understanding and analysis*. World Tourism Education and Research Centre, University of Calgary.

[93]. Edwards, J. A., & Llurdés, J. C. (1996). Industrial heritage: mines and quarries. *Annals of Tourism Research*, *23*(2), 341-363.

[94]. Gordon, R., & Raber, M. (2000). Industrial heritage in Northwest Connecticut: A guide to history and archaeology. *(No Title)*.

[95]. Mansfeld, Y. (1992). From motivation to actual travel. *Annals of tourism research*, *19*(3), 399-419.

[96]. Halewood, C., & Hannam, K. (2001). Viking heritage tourism: Authenticity and commodification. *Annals of tourism research*, *28*(3), 565-580.

[97]. Beaudet, G., & Lundgren, J. O. (1996). Industrial heritage.

[98]. Gross, M. (2000). Adapting Western Style Regional Planning to Russia: The University of Massachusetts-Pskov Region Partnership. *European Planning Studies*, *8*(5), 619-630.

[99]. Pretes, M. (2002). Touring mines and mining tourists. *Annals of tourism research*, *29*(2), 439-456.

[100]. Bramwell, B., & Rawding, L. (1996). Tourism marketing images of industrial cities. *Annals of Tourism research*, *23*(1), 201-221.

[101]. Alfrey, J., & Clark, C. (2005). *The landscape of industry: patterns of change in the Ironbridge Gorge*. Routledge.

[102]. McBoyle, G. (1996). Green tourism and Scottish distilleries. *Tourism Management*, *17*(4), 255-263.

[103]. Jansen-Verbeke, M., & Spee, R. (1995). A regional analysis of tourist flows within Europe. *Tourism Management*, *16*(1), 73-80.

[104]. Jansen-Verbeke, M. (1997). Urban tourism: Managing resources and visitors. *Tourism, development and growth: The Challenge of Sustainability*, 237-256.

[105]. Caffyn, A., & Lutz, J. (1999). Developing the heritage tourism product in multi-ethnic cities. *Tourism management*, *20*(2), 213-221.

[106]. Nag, A., & Mishra, S. (2024). Mining Ghost Town Revitalization through Heritage Tourism Initiatives. *Journal of Mining and Environment*, *15*(2), 439-461.

[107]. Hospers, G. J. (2002). Industrial heritage tourism and regional restructuring in the European Union. *European Planning Studies*, *10*(3), 397-404.

[108]. Kerstetter, D., Confer, J., & Bricker, K. (1998). Industrial heritage attractions: Types and tourists. *Journal of Travel & Tourism Marketing*, *7*(2), 91-104.

[109]. Vargas-Sánchez, A. (2015). Industrial heritage and tourism: A review of the literature. *The Palgrave handbook of contemporary heritage research*, 219-233.

[110]. Alfrey, J., & Putnam, T. (1992). The industry heritage: managing resources and uses.

[111]. Yan, M., Li, Q., & Zhang, J. (2023). Rethinking Industrial Heritage Tourism Resources in the EU: a spatial perspective. *Land*, *12*(8), 1510.

[112]. Harfst, J., Sandriester, J., Mildeberg, S., Dołzbłasz, S., & Grochowska, A. (2025). Policies on industrial heritage tourism as a tool for sustainable regional development? a Central and Eastern European analysis. *Tourism Recreation Research*, 1-14.

[113]. Wang, H., Ge, J., Chen, X., Zhou, Q., & Huang, K. (2024). Heritage Tourism Development Should Take Care of Industrial Heritage Protection: A Study on the Development Strategy of Industrial Heritage Tourism in Nanjing. *Sustainability (2071-1050)*, *16*(19).

[114]. Szromek, A. R., & Butler, R. W. (2024). A re-positioning of post-industrial heritage in upper Silesia, Poland, into an integrated thematic tourist route. *Journal of Heritage Tourism*, *19*(2), 310-330.

[115]. Stratton, M. (2003). *Industrial buildings: conservation and regeneration*. Taylor & Francis.

[116]. Gunn, C. A., & Var, T. (2002). *Tourism planning: Basics, concepts, cases*. Psychology Press.

[117]. Tiesdell, S., Oc, T., & Heath, T. (1996). Revitalizing Historic Urban Quarters, Hartnolls Ltd.

[118]. Heath, T., Oc, T., & Tiesdell, S. (2011). *Public Places-Urban Spaces*. Routledge.

[119]. Gospodini, A. (2020). Urban design: The evolution of concerns, the increasing power, challenges and perspectives. *Journal of Urban Design*, *25*(1), 16-20.

[120]. Higgins-Desbiolles, F. (2018). Sustainable tourism: Sustaining tourism or something more?. *Tourism management perspectives*, *25*, 157-160.

[121]. Hall, C. M., & Ram, Y. (2019). Measuring the relationship between tourism and walkability? Walk Score and English tourist attractions. *Journal of Sustainable Tourism*, *27*(2), 223-240.

[122]. Zheng, X., Huang, J., Wu, J., Sun, S., & Wang, S. (2023). Emerging trends in online reviews research in hospitality and tourism: A scientometric update (2000–2020). *Tourism Management Perspectives*, *47*, 101105.

[123]. Gössling, S., Hall, C. M., Ekström, F., Engeset, A. B., & Aall, C. (2012). Transition management: A tool for implementing sustainable tourism scenarios?. *Journal of Sustainable Tourism*, *20*(6), 899-916.

[124]. Guri, E. A. I., Osumanu, I. K., & Bonye, S. Z. (2021). Eco-cultural tourism development in Ghana: potentials and expected benefits in the Lawra Municipality. *Journal of Tourism and Cultural Change*, *19*(4), 458-476.

[125]. Hall, C. M. (2011). Health and medical tourism: a kill or cure for global public health?. *Tourism review*, *66*(1/2), 4-15.

[126]. Lane, B. (2018). Will sustainable tourism research be sustainable in the future? An opinion piece. *Tourism management perspectives*, *25*, 161-164.

[127]. Chhabra, D. (2009). Proposing a sustainable marketing framework for heritage tourism. *Journal of Sustainable Tourism*, *17*(3), 303-320.

[128]. Loperena, C. A. (2017). Honduras is open for business: extractivist tourism as sustainable development in the wake of disaster?. *Journal of Sustainable Tourism*, *25*(5), 618-633.

[129]. Sharpley, R. (2020). Tourism, sustainable development and the theoretical divide: 20 years on. *Journal of sustainable tourism*, *28*(11), 1932-1946.

[130]. Loulanski, T., & Loulanski, V. (2011). The sustainable integration of cultural heritage and tourism: A meta-study. *Journal of sustainable tourism*, *19*(7), 837-862.

[131]. Engels, B. (2017). Natural world heritage and the sustainable development goals. *Going Beyond: Perceptions of Sustainability in Heritage Studies No. 2*, 45-56.

[132]. Bui, V., Alaei, A. R., Vu, H. Q., Li, G., & Law, R. (2022). Revisiting tourism destination image: A holistic measurement framework using big data. *Journal of Travel Research*, *61*(6), 1287-1307.

[133]. Harbor, L. C., & Hunt, C. A. (2021). Indigenous tourism and cultural justice in a Tz'utujil maya community, guatemala. In *Justice and Tourism* (pp. 72-91). Routledge.

[134]. Ruhanen, L., & Whitford, M. (2021). Cultural heritage and Indigenous tourism. In *Indigenous heritage* (pp. 1-13). Routledge.

[135]. Nicholas, L., & Thapa, B. (2010). Visitor perspectives on sustainable tourism development in the pitons management area world heritage site, St. Lucia. *Environment, Development and Sustainability*, *12*, 839-857.

[136]. Haukeland, J. V. (2011). Tourism stakeholders' perceptions of national park management in Norway. *Journal of sustainable tourism*, *19*(2), 133-153.

[137]. Li, D., Du, P., & He, H. (2022). Artificial Intelligence-Based Sustainable Development of Smart Heritage Tourism. *Wireless Communications and Mobile Computing*, *2022*(1), 5441170.

[138]. Jia, S., Chi, O. H., Martinez, S. D., & Lu, L. (2025). When "old" meets "new": Unlocking the future of innovative technology implementation in heritage tourism. *Journal of Hospitality & Tourism Research*, *49*(3), 640-661.

[139]. Wang, L., Ruan, W. Q., & Li, Y. Q. (2025). Is AI heritage tourism interpretations better at deepening your cultural memory?. *Journal of Hospitality and Tourism Management*, *63*, 68-76.

[140]. Nuraeni, E., Purnomo, W., & Hidayat, I. I. N. (2025). Integration of AI, Big Data, and Cultural Heritage in Tourism Marketing: A Case Study of Klaten. *International Journal of Economic and Tourism Research*, *1*(1), 27-33.

[141]. Sahoo, B., & Debnath, B. K. (2024). Select the Best Place for Regenerative Practices in Tourism by Using the Fuzzy MABAC Method. In *Building Community Resiliency and Sustainability With Tourism Development* (pp. 261-285). IGI Global.

[142]. Dobbie, M., & Green, R. (2013). Public perceptions of freshwater wetlands in Victoria, Australia. *Landscape and Urban Planning*, *110*, 143-154.

[143]. Jigyasu, R. (2016). Reducing disaster risks to urban cultural heritage: global challenges and opportunities. *Journal of Heritage Management*, *1*(1), 59-67.

[144]. Jha-Thakur, U., Khosravi, F., Quattrone, G., Bandyopadhyay, S., Magedera, I., & Garikipati, S. (2020). *Exploring Sustainability in Cultural Heritage Tourism Planning: Can Strategic Environmental Assessment Fill in the Gap?* (No. 202005).

[145]. Mishra, P. K., Rout, H. B., & Pradhan, B. B. (2018). Seasonality in tourism and forecasting foreign tourist arrivals in India. *Interdisciplinary Journal of Management Studies (Formerly known as Iranian Journal of Management Studies)*, *11*(4), 629-658.

[146]. Solnit, R. (2001). *Wanderlust: A history of walking*. Penguin.

[147]. Gunderson, L. H., & Holling, C. S. (2002). *Panarchy: Understanding transformations in human and natural systems* (pp. xxiv+-507).

[148]. Leinfelder, R. R., Iramina, W. S., & Eston, S. M. D. (2015). Mining as a tool for reclamation of a Degraded Area. *Rem: Revista Escola de Minas*, *68*, 215-220.

[149]. Jamal, T., & Stronza, A. (2009). Collaboration theory and tourism practice in protected areas: Stakeholders, structuring and sustainability. *Journal of Sustainable tourism*, *17*(2), 169-189.

[150]. Fullagar, S., Markwell, K. W., & Wilson, E. (Eds.). (2012). *Slow tourism: Experiences and mobilities* (Vol. 54). Channel View Publications.

[151]. Areeparampil, M. (1996). Displacement due to mining in Jharkhand. *Economic and Political Weekly*, 1524-1528.

[152]. Ingold, T. (2021). *The perception of the environment: essays on livelihood, dwelling and skill*. routledge.

[153]. Kalay, Y., Kvan, T., & Affleck, J. (2008). New heritage. *New Media and Cultural Heritage; Routledge: London, UK; New York, NY, USA*.

[154]. Pouresmaieli, M., Ataei, M., Qarahasanlou, A. N., & Barabadi, A. (2024). Building ecological literacy in mining communities: A sustainable development perspective. *Case Studies in Chemical and Environmental Engineering*, *9*, 100554.

[155]. Pouresmaieli, M., Boroumand, Y., Habibi, M., Maleki, R., Ataei, M., & Qarahasanlou, A. N. (2025). Green mining with artificial intelligence: a path to sustainability. In *Artificial Intelligence in Future Mining* (pp. 309-354). Academic Press.

[156]. Pouresmaieli, M., Ataei, M., Qarahasanlou, A. N., & Barabadi, A. (2024). Corporate social responsibility in complex systems based on sustainable development. *Resources Policy*, *90*, 104818.

[157]. Pouresmaieli, M., Ataei, M., Nouri Qarahasanlou, A., & Barabadi, A. (2024). Multi-criteria Decision-making Methods for Sustainable Decision-making in the Mining Industry (A Comprehensive Study). *Journal of Mining and Environment*, *15*(2), 683-706.

[158]. Pouresmaieli, M., Ataei, M., & Qarahasanlou, A. N. (2023). A scientometrics view on sustainable development in surface mining: Everything from the beginning. *Resources policy*, *82*, 103410.

ANNEXURE

Table 5. Selected variables for the study apart from visitor demographics (Source: Author)

Sr. No.	Variable	Description	Justification	Likert Scale (1-5)
A1	Visual quality of landscape	Perceived attractiveness of the site's topography	Impacts first impressions and destination branding	1=Poor, 5=Excellent
A2	Clarity of narrative	Coherence of interpretative and historical narrative	Enhances educational value and cultural connection	1=Unclear, 5=Clear
A3	Soil stability	Preventing land degradation and erosion	Indicates ecological restoration success	1=Unstable, 5=Stable
A4	Erosion control	Anti-erosion measures' effectiveness	Critical for long-term site preservation	1=Inadequate, 5=Effective
A5	Soil productivity	Potential for agriculture and vegetation on the land	Measures post-mining economic viability	1=Non-productive, 5=Productive
A6	Vegetation cover	Plant life's diversity and density	Key ecological rehabilitation indicator	1=Sparse, 5=Dense
A7	Natural drainage restoration	Water management systems' efficacy	Prevents flooding and maintains ecosystem balance	1=Poor, 5=Excellent
A8	Biodiversity	Presence of variety of flora/fauna species	Measures ecological value and conservation success	1=Low, 5=High
A9	Water quality	Water bodies' chemical and biological safety	Affects recreational use and ecosystem health	1=Polluted, 5=Clean
A10	General accessibility	Accessibility of the location	Determines visitor inflow and inclusivity	1=Difficult, 5=Easy
A11	Identity linkage (site's sense of place)	Extent to which the location reflects or strengthens regional or local identity	Fosters community pride and strengthens cultural resonance for visitors	1 = Not at all, 5 = Very strongly
A12	Cultural/historic significance	Perceived significance of the location's historical and cultural significance	Drives heritage tourism appeal and justifies conservation investment	1 = Not significant, 5 = Highly significant
A13	Overall visitor satisfaction	Overall contentment with the experience of the visit	Summarizes the effectiveness of all site attributes from the visitor's perspective	1 = Very dissatisfied, 5 = Very satisfied
A14	Availability of basic amenities	Availability of amenities including drinking water, shelter, and restrooms, among others.	Essential for visitor comfort and longer stays	1 = None, 5 = Fully available
A15	Terrain compatibility (ease of movement)	Site's ease of navigation (paths, slopes, accessibility)	Influences inclusivity and safety for all visitor groups	1 = Very difficult, 5 = Very easy
A16	Wayfinding and signage clarity	Signs and navigational aids' sufficiency and clarity	Reduces confusion, enhances safety, and improves visitor experience	1 = Very unclear, 5 = Very clear
A17	Parking and transport access	Parking and public transportation accessibility and ease	Supports higher visitor numbers and accessibility for all demographics	1 = Very poor, 5 = Excellent
A18	Site cleanliness	Cleanliness and upkeep of the location	Affects health, satisfaction, and site reputation	1 = Very dirty, 5 = Very clean
A19	Visual integration of water features	Degree to which water bodies are incorporated both aesthetically and functionally	Enhances landscape value and recreational potential	1 = Not integrated, 5 = Fully integrated
A20	Aesthetic appeal of landforms	Site's natural and reclaimed landforms' attractiveness	Influences first impressions and destination attractiveness	1 = Not attractive, 5 = Very attractive
A21	Integration with local roads/transport	How well the location is connected to the local transportation and road systems	Good integration increases accessibility and potential visitor numbers	1=Very Poor, 5=Excellent
A22	Perceived safety from hazards	Perception of visitor safety from structural or environmental risks	Ensures visitor confidence and reduces risk of accidents	1=Very Unsafe, 5=Very Safe
A23	Lighting and nighttime safety	Sufficient illumination and security in the evening	Nighttime safety is critical for extended visitation and inclusiveness	1=Very Inadequate, 5=Very Adequate
A24	Digital interface/signage (technology access)	Quality and accessibility of smart signage or digital guides	Technology enhances interpretation and appeals to younger/digital-native visitors	1=Not Available, 5=Highly Available
A25	Visitor information availability	Information about visitors is present and clear (maps, brochures)	Informs and orients visitors, improving experience and reducing confusion	1=Not Available, 5=Highly Available
A26	Maintenance of infrastructure	Standard and regularity of physical facility maintenance	Well-maintained infrastructure ensures safety, comfort, and positive impressions	1=Very Poor, 5=Excellent
A27	Seating/resting areas	Comfort and accessibility of areas for sitting and resting	Rest areas increase comfort, especially for elderly and families	1=None, 5=Abundant and Comfortable
A28	Waste management	Cleanliness and garbage collection efficiency	Cleanliness affects health, satisfaction, and environmental sustainability	1=Very Poor, 5=Excellent
A29	Land usability (post-mining)	Reclaimed land's suitability for new uses (farming, recreation)	Indicates long-term success of reclamation and supports diverse economic/social activities	1=Not Usable, 5=Highly Usable
A30	Livelihood generation (local employment)	Possibilities for local business or employment	Directly supports community benefit and increases local support for heritage tourism	1=None, 5=Many Opportunities
A31	Crowd management	Efficiency in controlling traffic and visitor flow	Ensures visitor comfort and safety, prevents overcrowding	1=Very Poor, 5=Excellent
A32	Navigability of trails/paths	Walking trails and site pathways are easy to navigate	Directly impacts accessibility and visitor satisfaction	1=Very Difficult, 5=Very Easy

Sr. No.	Variable	Description	Justification	Likert Scale (1-5)
A33	Trail/path quality	Trails and pathways' physical state and upkeep	Good paths are essential for safe and enjoyable site exploration	1=Very Poor, 5=Excellent
A34	Community interaction/ engagement	Level of involvement of the local community at the location	Community involvement supports sustainability and local economic benefit	1=Not at all, 5=Very much
A35	Shade and weather protection	Presence of weather shelters and shade structures	Protects visitors from sun/rain, increasing comfort and duration of stay	1=None, 5=Abundant
A36	Ecological value (perceived)	Perceived biodiversity and ecological health of the location	Reflects success of reclamation and enhances educational/recreational appeal	1=Very Low, 5=Very High
A37	Educational value	Site's worth for studying history, ecology, or mining	Drives school visits and supports the site's heritage tourism positioning	1=Very Low, 5=Very High
A38	Recreational facilities	Accessibility and caliber of recreational facilities	Recreation attracts broader visitor demographics and increases site use	1=None, 5=Excellent
A39	Water recreation prospects	Water bodies' suitability for leisure activities (boating, picnics)	Adds diverse activities, enhances attractiveness and visitor engagement	1=Not suitable, 5=Highly suitable
A40	Observation/viewing decks	Existence and caliber of platforms for watching and observing	Allows safe appreciation of landscape and heritage features	1=None, 5=Excellent
A41	Social integration (community use zones)	Integration areas for social usage and community gatherings	Fosters local ownership and regular site activity	1=None, 5=Fully integrated
A42	Visitor safety (overall)	Overall feeling of security for site visitors	Essential for positive experience and reputation	1=Very Unsafe, 5=Very Safe
A43	Emergency/first aid facilities	First aid and emergency response services availability	Critical for risk management and visitor confidence	1=None, 5=Excellent
A44	Interpretive signage (heritage panels, AR/VR)	Utilization and quality of digital AR/VR, interpretive panels, etc.	Enhances learning, storytelling, and engagement with heritage	1=None, 5=Excellent
A45	Integration with local economy (shops, vendors)	Existence of neighborhood stores, merchants, and business connections	Supports local livelihoods and creates a vibrant visitor economy	1=None, 5=Fully integrated
A46	Multi-functionality/ adaptive reuse	Extent to which recovered land can accommodate a variety of applications	Indicates long-term sustainability and flexibility of post-mining landscape	1=Not at all, 5=Highly multifunctional

Table 6. One-sample T-test of Surveyed Participants for Dhori Mines using SPSS 16.0 (Source: Author)

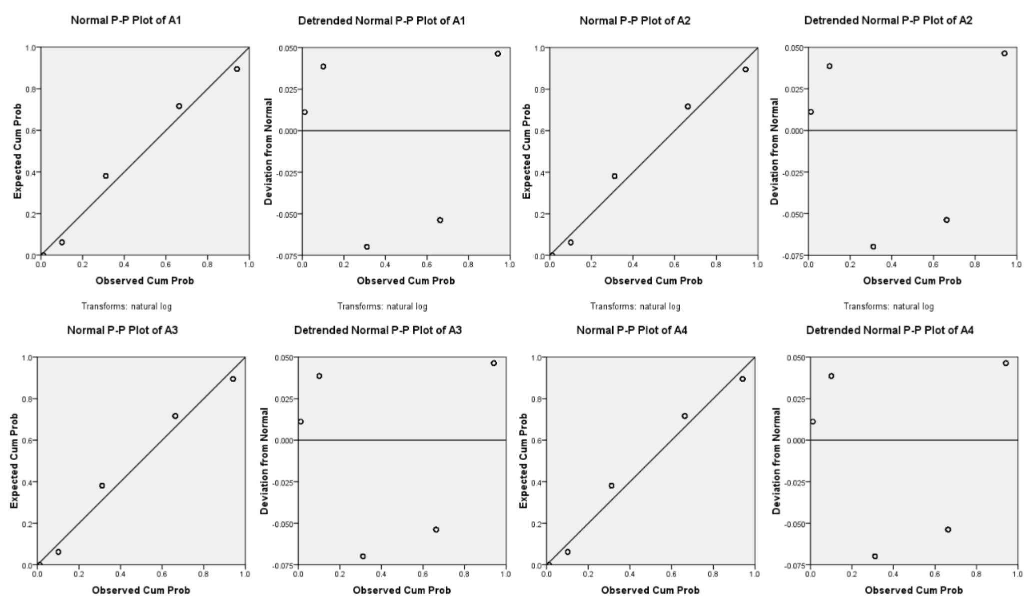
One-Sample Statistics										
Test Value = 5										
	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
									Lower	Upper
A1	441	3.4739	.96053	.04574	-33.365	440	.000	-1.52608	-1.6160	-1.4362
A2	441	3.4739	.96053	.04574	-33.365	440	.000	-1.52608	-1.6160	-1.4362
A3	441	3.4739	.96053	.04574	-33.365	440	.000	-1.52608	-1.6160	-1.4362
A4	441	3.4739	.96053	.04574	-33.365	440	.000	-1.52608	-1.6160	-1.4362
A5	441	3.3039	1.29622	.06172	-27.479	440	.000	-1.69615	-1.8175	-1.5748
A6	441	3.4490	1.20708	.05748	-26.984	440	.000	-1.55102	-1.6640	-1.4381
A7	441	3.4739	.96053	.04574	-33.365	440	.000	-1.52608	-1.6160	-1.4362
A8	441	3.2948	1.21138	.05768	-29.561	440	.000	-1.70522	-1.8186	-1.5918
A9	441	3.4739	.96053	.04574	-33.365	440	.000	-1.52608	-1.6160	-1.4362
A10	441	3.5329	1.19637	.05697	-25.752	440	.000	-1.46712	-1.5791	-1.3552
A11	441	3.6190	1.12815	.05372	-25.706	440	.000	-1.38095	-1.4865	-1.2754
A12	441	3.5601	1.11259	.05298	-27.178	440	.000	-1.43991	-1.5440	-1.3358
A13	441	3.6531	1.06592	.05076	-26.537	440	.000	-1.34694	-1.4467	-1.2472
A14	441	3.5873	1.09637	.05221	-27.059	440	.000	-1.41270	-1.5153	-1.3101
A15	441	3.5533	1.19943	.05712	-25.330	440	.000	-1.44671	-1.5590	-1.3345
A16	441	3.5147	1.09975	.05237	-28.362	440	.000	-1.48526	-1.5882	-1.3823
A17	441	3.5261	1.08077	.05147	-28.639	440	.000	-1.47392	-1.5751	-1.3728
A18	441	3.6304	1.13493	.05404	-25.342	440	.000	-1.36961	-1.4758	-1.2634
A19	441	3.5351	1.13388	.05399	-27.130	440	.000	-1.46485	-1.5710	-1.3587
A20	441	3.2880	1.12252	.05345	-32.028	440	.000	-1.71202	-1.8171	-1.6070
A21	441	3.5034	.92962	.04427	-33.808	440	.000	-1.49660	-1.5836	-1.4096
A22	441	3.5283	.91936	.04378	-33.616	440	.000	-1.47166	-1.5577	-1.3856
A23	441	3.4739	.96053	.04574	-33.365	440	.000	-1.52608	-1.6160	-1.4362
A24	441	3.5215	.92447	.04402	-33.584	440	.000	-1.47846	-1.5650	-1.3919
A25	441	3.5374	.96252	.04583	-31.910	440	.000	-1.46259	-1.5527	-1.3725
A26	441	3.5533	1.01913	.04853	-29.811	440	.000	-1.44671	-1.5421	-1.3513
A27	441	3.5420	1.14363	.05446	-26.774	440	.000	-1.45805	-1.5651	-1.3510
A28	441	3.5057	1.15821	.05515	-27.094	440	.000	-1.49433	-1.6027	-1.3859
A29	441	3.2404	1.31644	.06269	-28.070	440	.000	-1.75964	-1.8828	-1.6364
A30	441	3.5057	1.13642	.05412	-27.614	440	.000	-1.49433	-1.6007	-1.3880
A31	441	3.4739	.96053	.04574	-33.365	440	.000	-1.52608	-1.6160	-1.4362
A32	441	3.4739	.96053	.04574	-33.365	440	.000	-1.52608	-1.6160	-1.4362

One-Sample Statistics										
Test Value = 5										
	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
									Lower	Upper
A33	441	3.4739	.96053	.04574	-33.365	440	.000	-1.52608	-1.6160	-1.4362
A34	441	3.4649	1.12382	.05352	-28.686	440	.000	-1.53515	-1.6403	-1.4300
A35	441	3.4739	1.18700	.05652	-26.999	440	.000	-1.52608	-1.6372	-1.4150
A36	441	3.3719	1.14714	.05463	-29.805	440	.000	-1.62812	-1.7355	-1.5208
A37	441	3.4739	.96053	.04574	-33.365	440	.000	-1.52608	-1.6160	-1.4362
A38	441	3.5147	1.10593	.05266	-28.203	440	.000	-1.48526	-1.5888	-1.3818
A39	441	3.6735	1.04770	.04989	-26.589	440	.000	-1.32653	-1.4246	-1.2285
A40	441	3.5351	1.24106	.05910	-24.787	440	.000	-1.46485	-1.5810	-1.3487
A41	441	3.3719	1.12109	.05339	-30.498	440	.000	-1.62812	-1.7330	-1.5232
A42	441	3.5646	1.08754	.05179	-27.717	440	.000	-1.43537	-1.5372	-1.3336
A43	441	3.6508	1.12232	.05344	-25.245	440	.000	-1.34921	-1.4542	-1.2442
A44	441	3.4943	1.14637	.05459	-27.582	440	.000	-1.50567	-1.6130	-1.3984
A45	441	3.2358	1.10933	.05283	-33.396	440	.000	-1.76417	-1.8680	-1.6604
A46	441	3.4195	1.09896	.05233	-30.202	440	.000	-1.58050	-1.6833	-1.4776

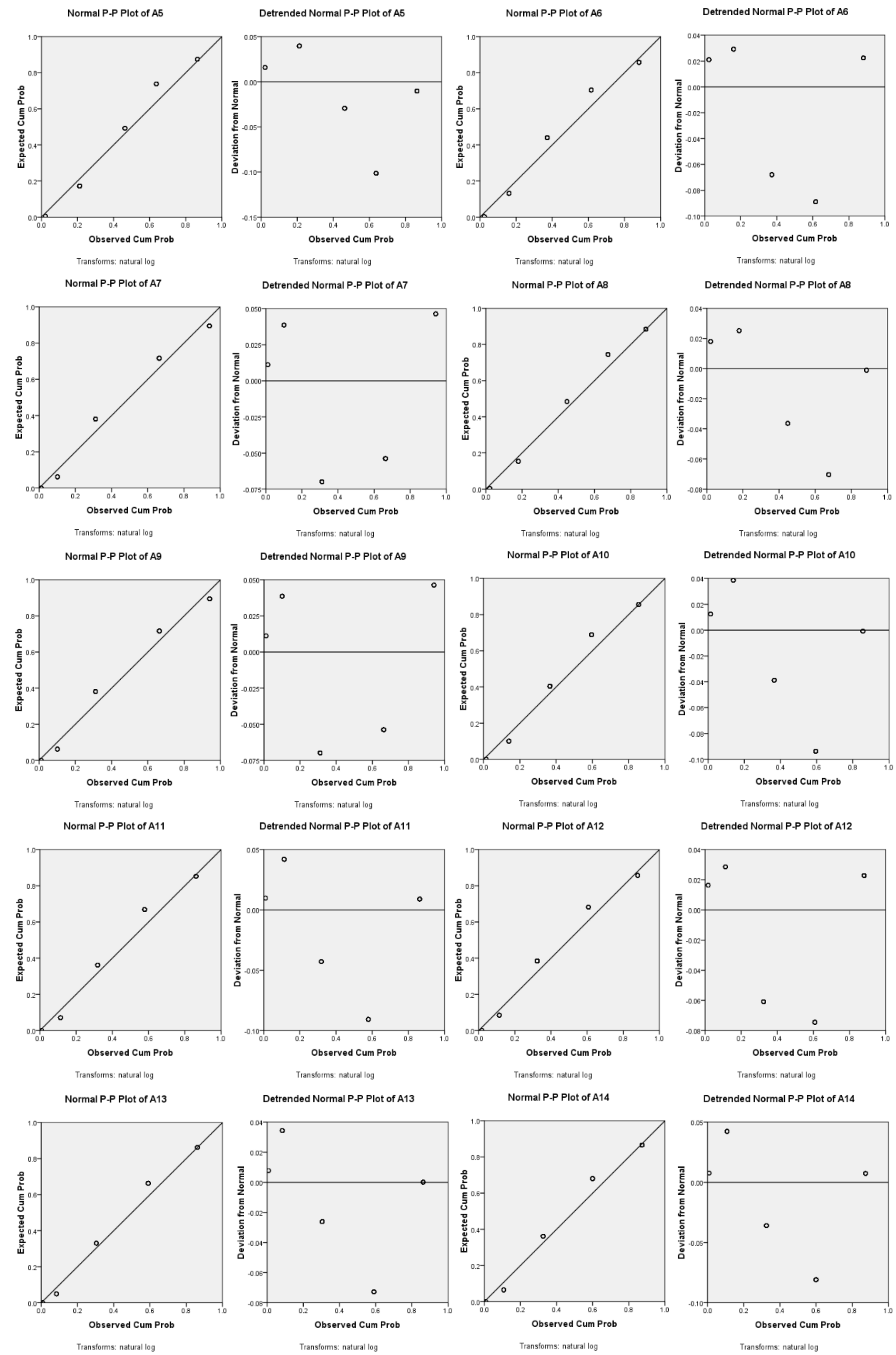
Table 7. Chi-Squire Test of Surveyed Participants for Dhori Mines using SPSS 16.0 (Source: Author)

	Chi-Square	df	Asymp. Sig.
A1	2.286E2[a]	4	.000
A2	2.286E2[a]	4	.000
A3	2.286E2[a]	4	.000
A4	2.286E2[a]	4	.000
A5	1.133E2[a]	4	.000
A6	76.721[a]	4	.000
A7	2.286E2[a]	4	.000
A8	79.941[a]	4	.000
A9	2.286E2[a]	4	.000
A10	90.281[a]	4	.000
A11	1.066E2[a]	4	.000
A12	1.030E2[a]	4	.000
A13	1.317E2[a]	4	.000
A14	1.096E2[a]	4	.000
A15	83.320[a]	4	.000
A16	1.080E2[a]	4	.000
A17	1.308E2[a]	4	.000
A18	1.077E2[a]	4	.000
A19	92.730[a]	4	.000
A20	1.039E2[a]	4	.000
A21	2.559E2[a]	4	.000
A22	2.521E2[a]	4	.000
A23	2.286E2[a]	4	.000
A24	2.764E2[a]	4	.000
A25	2.468E2[a]	4	.000
A26	1.985E2[a]	4	.000
A27	1.154E2[a]	4	.000
A28	86.336[a]	4	.000
A29	47.583[a]	4	.000
A30	91.506[a]	4	.000
A31	2.286E2[a]	4	.000
A32	2.286E2[a]	4	.000
A33	2.286E2[a]	4	.000
A34	95.451[a]	4	.000
A35	99.964[a]	4	.000
A36	84.567[a]	4	.000
A37	2.286E2[a]	4	.000
A38	1.091E2[a]	4	.000
A39	1.433E2[a]	4	.000
A40	1.212E2[a]	4	.000
A41	1.079E2[a]	4	.000
A42	1.113E2[a]	4	.000
A43	1.116E2[a]	4	.000
A44	99.646[a]	4	.000
A45	1.032E2[a]	4	.000
A46	1.035E2[a]	4	.000

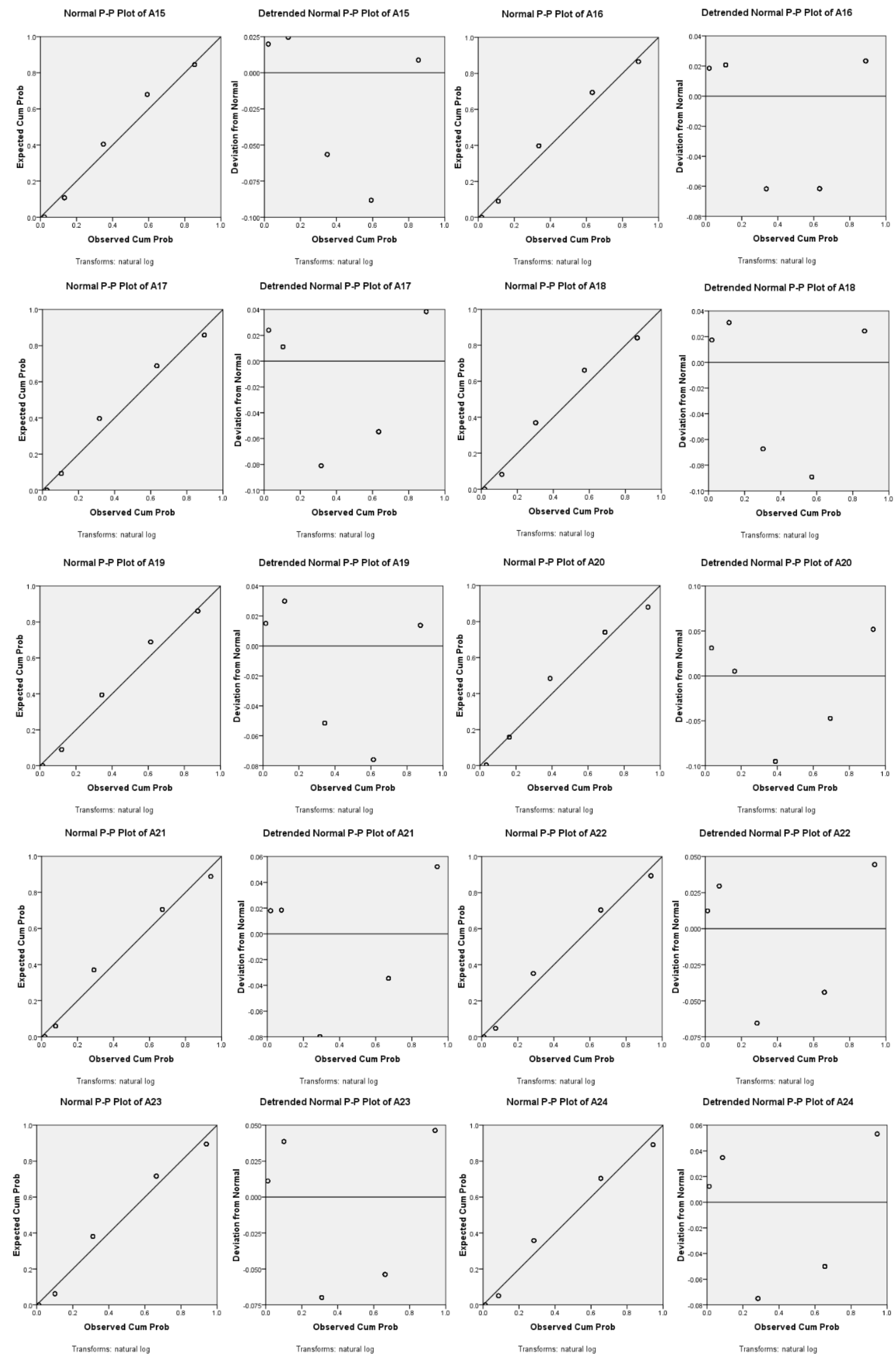
a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 88.2.



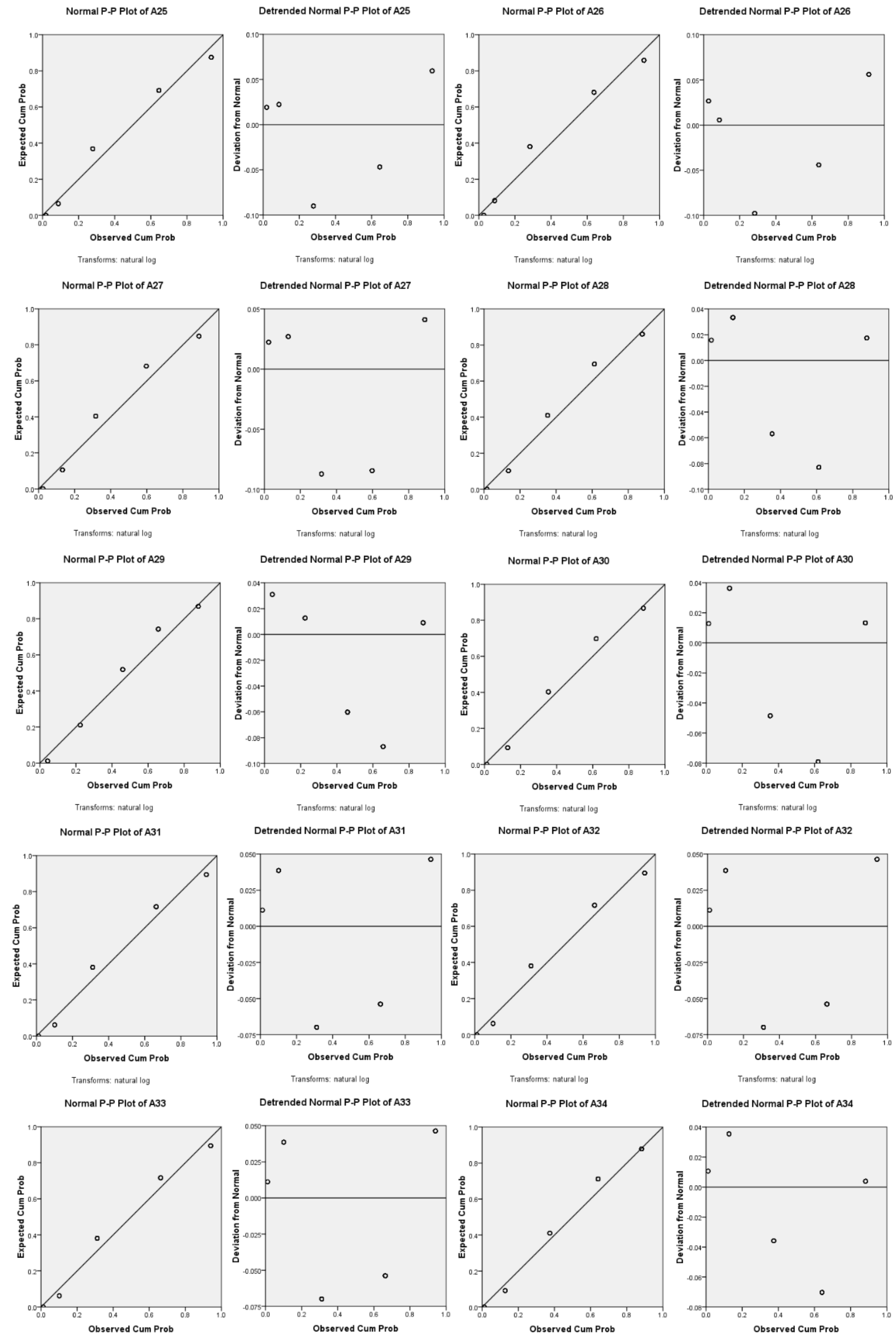
Continuous of Figure 7. Probability distribution of visitor satisfaction and stakeholder perception variables for Dhori Mines. Analysis conducted using SPSS 16.0 based on Likert-scale survey items (n = 441) (Source: Author)



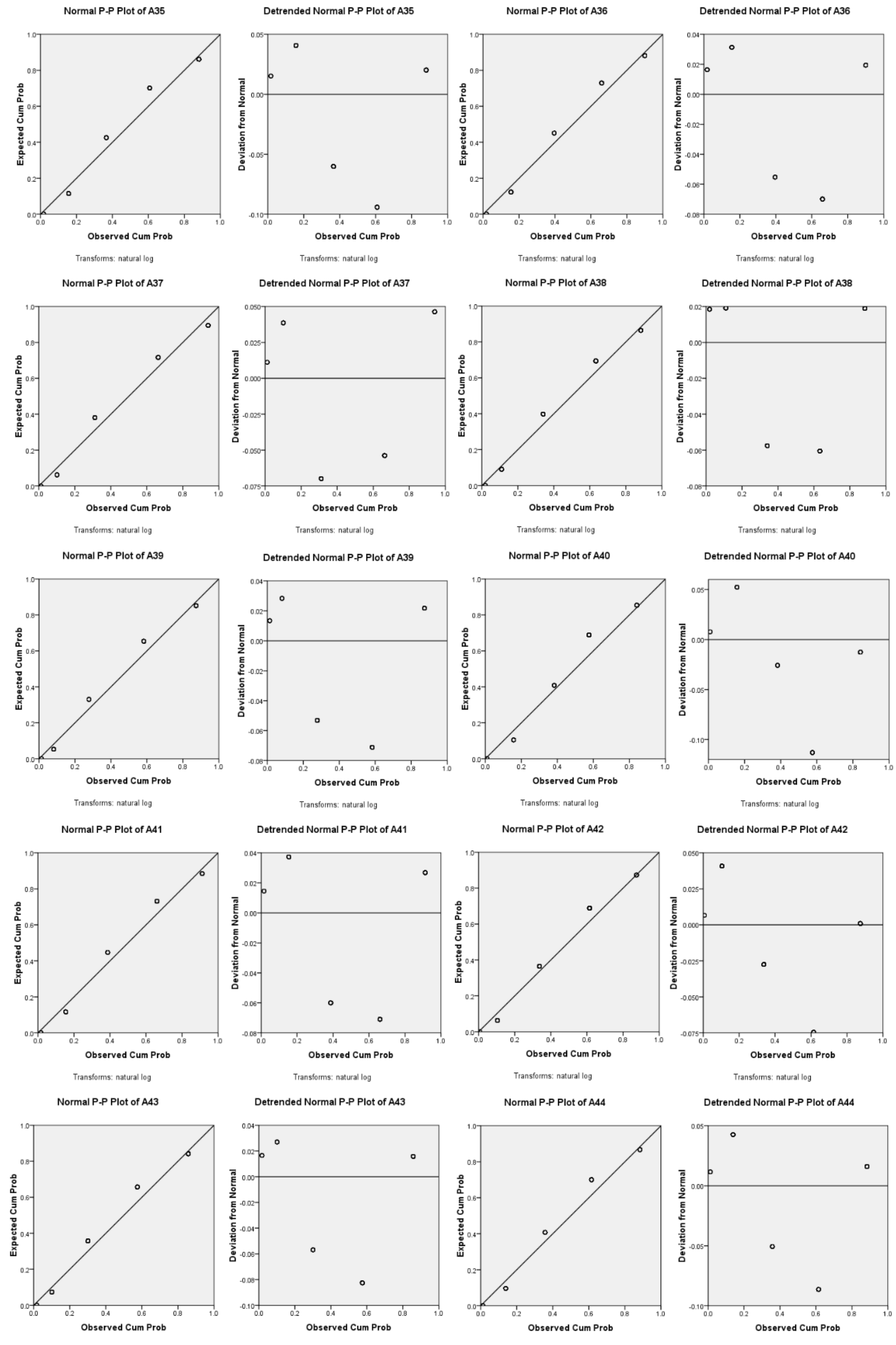
Continuous of Figure 7. Probability distribution of visitor satisfaction and stakeholder perception variables for Dhori Mines. Analysis conducted using SPSS 16.0 based on Likert-scale survey items (n = 441) (Source: Author)



Continuous of Figure 7. Probability distribution of visitor satisfaction and stakeholder perception variables for Dhori Mines. Analysis conducted using SPSS 16.0 based on Likert-scale survey items (n = 441) (Source: Author)



Continuous of Figure 7. Probability distribution of visitor satisfaction and stakeholder perception variables for Dhori Mines. Analysis conducted using SPSS 16.0 based on Likert-scale survey items (n = 441) (Source: Author)



Continuous of Figure 7. Probability distribution of visitor satisfaction and stakeholder perception variables for Dhori Mines. Analysis conducted using SPSS 16.0 based on Likert-scale survey items (n = 441) (Source: Author)

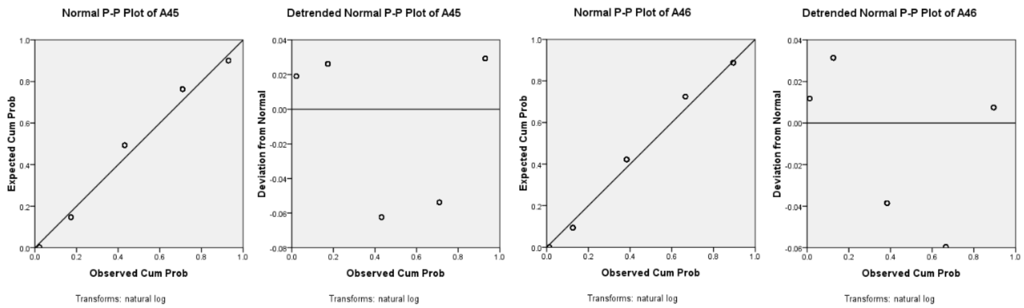


Figure 7. Probability distribution of visitor satisfaction and stakeholder perception variables for Dhori Mines. Analysis conducted using SPSS 16.0 based on Likert-scale survey items (n = 441) (Source: Author)

Table 8. One-Sample Kolmogorov-Smirnov Test (Normal and Poisson) for Dhori Mines using SPSS 16.0 (Source: Author)

	N	Normal Parameters[a] Mean	Normal Parameters[a] Std. Dev.	Most Extreme Differences Absolute	Most Extreme Differences Positive	Most Extreme Differences Negative	Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
A1	441	3.4739	.96053	.266	.176	-.266	5.583	.000
A2	441	3.4739	.96053	.266	.176	-.266	5.583	.000
A3	441	3.4739	.96053	.266	.176	-.266	5.583	.000
A4	441	3.4739	.96053	.266	.176	-.266	5.583	.000
A5	441	3.3039	1.29622	.224	.224	-.174	4.698	.000
A6	441	3.4490	1.20708	.207	.159	-.207	4.338	.000
A7	441	3.4739	.96053	.266	.176	-.266	5.583	.000
A8	441	3.2948	1.21138	.177	.177	-.152	3.709	.000
A9	441	3.4739	.96053	.266	.176	-.266	5.583	.000
A10	441	3.5329	1.19637	.178	.152	-.178	3.737	.000
A11	441	3.6190	1.12815	.201	.139	-.201	4.229	.000
A12	441	3.5601	1.11259	.200	.146	-.200	4.204	.000
A13	441	3.6531	1.06592	.186	.186	-.172	3.900	.000
A14	441	3.5873	1.09637	.195	.155	-.195	4.104	.000
A15	441	3.5533	1.19943	.176	.152	-.176	3.704	.000
A16	441	3.5147	1.09975	.183	.168	-.183	3.842	.000
A17	441	3.5261	1.08077	.198	.158	-.198	4.155	.000
A18	441	3.6304	1.13493	.215	.123	-.215	4.514	.000
A19	441	3.5351	1.13388	.183	.158	-.183	3.841	.000
A20	441	3.2880	1.12252	.216	.131	-.216	4.526	.000
A21	441	3.5034	.92962	.243	.179	-.243	5.105	.000
A22	441	3.5283	.91936	.254	.182	-.254	5.331	.000
A23	441	3.4739	.96053	.266	.176	-.266	5.583	.000
A24	441	3.5215	.92447	.280	.194	-.280	5.888	.000
A25	441	3.5374	.96252	.265	.186	-.265	5.567	.000
A26	441	3.5533	1.01913	.225	.161	-.225	4.725	.000
A27	441	3.5420	1.14363	.241	.129	-.241	5.054	.000
A28	441	3.5057	1.15821	.198	.141	-.198	4.161	.000
A29	441	3.2404	1.31644	.190	.190	-.162	3.985	.000
A30	441	3.5057	1.13642	.192	.148	-.192	4.033	.000
A31	441	3.4739	.96053	.266	.176	-.266	5.583	.000
A32	441	3.4739	.96053	.266	.176	-.266	5.583	.000
A33	441	3.4739	.96053	.266	.176	-.266	5.583	.000
A34	441	3.4649	1.12382	.177	.177	-.166	3.726	.000
A35	441	3.4739	1.18700	.220	.172	-.220	4.619	.000
A36	441	3.3719	1.14714	.191	.159	-.191	4.011	.000
A37	441	3.4739	.96053	.266	.176	-.266	5.583	.000
A38	441	3.5147	1.10593	.178	.178	-.171	3.739	.000
A39	441	3.6735	1.04770	.205	.157	-.205	4.307	.000
A40	441	3.5351	1.24106	.196	.189	-.196	4.121	.000
A41	441	3.3719	1.12109	.216	.166	-.216	4.531	.000
A42	441	3.5646	1.08754	.177	.177	-.177	3.719	.000
A43	441	3.6508	1.12232	.189	.152	-.189	3.970	.000
A44	441	3.4943	1.14637	.210	.158	-.210	4.412	.000
A45	441	3.2358	1.10933	.197	.171	-.197	4.131	.000
A46	441	3.4195	1.09896	.188	.188	-.162	3.955	.000

a. Test distribution is Normal.

	N	Poisson Mean
A1	441	3.4739
A2	441	3.4739
A3	441	3.4739
A4	441	3.4739
A5	441	3.3039
A6	441	3.4490
A7	441	3.4739
A8	441	3.2948
A9	441	3.4739
A10	441	3.5329
A11	441	3.6190
A12	441	3.5601
A13	441	3.6531
A14	441	3.5873
A15	441	3.5533
A16	441	3.5147
A17	441	3.5261
A18	441	3.6304
A19	441	3.5351
A20	441	3.2880
A21	441	3.5034
A22	441	3.5283
A23	441	3.4739
A24	441	3.5215
A25	441	3.5374
A26	441	3.5533
A27	441	3.5420
A28	441	3.5057
A29	441	3.2404
A30	441	3.5057
A31	441	3.4739
A32	441	3.4739
A33	441	3.4739
A34	441	3.4649
A35	441	3.4739
A36	441	3.3719
A37	441	3.4739
A38	441	3.5147
A39	441	3.6735
A40	441	3.5351
A41	441	3.3719
A42	441	3.5646
A43	441	3.6508
A44	441	3.4943
A45	441	3.2358
A46	441	3.4195

Asymp. Sig. (2-tailed)	Kolmogorov-Smirnov Z	Most Extreme Differences Negative	Positive	Absolute
.000	3.234	-.147	.154	.154
.000	3.234	-.147	.154	.154
.000	3.234	-.147	.154	.154
.000	3.234	-.147	.154	.154
.000	2.469	-.117	.118	.118
.000	2.850	-.096	.136	.136
.000	3.234	-.147	.154	.154
.000	2.487	-.118	.116	.118
.000	3.234	-.147	.154	.154
.000	3.082	-.108	.147	.147
.000	3.329	-.106	.159	.159
.000	3.159	-.117	.150	.150
.000	3.428	-.142	.163	.163
.000	3.237	-.113	.154	.154
.000	3.140	-.090	.150	.150
.000	3.031	-.134	.144	.144
.000	3.304	-.157	.146	.157
.000	3.362	-.107	.160	.160
.000	3.088	-.106	.147	.147
.000	2.429	-.106	.116	.116
.000	4.201	-.200	.157	.200
.000	3.914	-.186	.157	.186
.000	3.234	-.147	.154	.154
.000	3.565	-.169	.170	.170
.000	3.736	-.178	.152	.178
.000	4.009	-.191	.150	.191
.000	3.108	-.113	.148	.148
.000	3.006	-.104	.143	.143
.000	2.311	-.082	.110	.110
.000	3.006	-.110	.143	.143
.000	3.234	-.147	.154	.154
.000	3.234	-.147	.154	.154
.000	3.234	-.147	.154	.154
.000	2.893	-.119	.138	.138
.000	2.918	-.107	.139	.139
.000	2.644	-.116	.126	.126
.000	3.234	-.147	.154	.154
.000	3.031	-.137	.144	.144
.000	3.489	-.154	.166	.166
.000	3.088	-.116	.147	.147
.000	2.644	-.121	.126	.126
.000	3.172	-.118	.151	.151
.000	3.422	-.126	.163	.163
.000	2.974	-.114	.142	.142
.000	2.641	-.126	.110	.126
.000	2.771	-.122	.132	.132

a. Test distribution is Poisson.

Table 9. Proximity Matrix for Dhori Mines using SPSS 16.0 (Source: Author)

Matrix File Input									
Case	**A1**	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**	**A8**	**A9**
A1	.000	.000	.000	.000	1.105E3	993.000	.000	1.077E3	.000
A2	.000	.000	.000	.000	1.105E3	993.000	.000	1.077E3	.000
A3	.000	.000	.000	.000	1.105E3	993.000	.000	1.077E3	.000
A4	.000	.000	.000	.000	1.105E3	993.000	.000	1.077E3	.000
A5	1.105E3	1.105E3	1.105E3	1.105E3	.000	1.228E3	1.105E3	1.120E3	1.105E3
A6	993.000	993.000	993.000	993.000	1.228E3	.000	993.000	1.256E3	993.000
A7	.000	.000	.000	.000	1.105E3	993.000	.000	1.077E3	.000
A8	1.077E3	1.077E3	1.077E3	1.077E3	1.120E3	1.256E3	1.077E3	.000	1.077E3
A9	.000	.000	.000	.000	1.105E3	993.000	.000	1.077E3	.000
A10	960.000	960.000	960.000	960.000	1.291E3	1.145E3	960.000	1.113E3	960.000
A11	972.000	972.000	972.000	972.000	1.411E3	1.169E3	972.000	1.145E3	972.000
A12	866.000	866.000	866.000	866.000	1.413E3	1.279E3	866.000	1.121E3	866.000
A13	907.000	907.000	907.000	907.000	1.352E3	1.150E3	907.000	1.194E3	907.000
A14	804.000	804.000	804.000	804.000	1.277E3	1.049E3	804.000	1.095E3	804.000
A15	963.000	963.000	963.000	963.000	1.366E3	1.146E3	963.000	1.310E3	963.000
A16	944.000	944.000	944.000	944.000	1.395E3	1.179E3	944.000	1.129E3	944.000
A17	945.000	945.000	945.000	945.000	1.276E3	1.170E3	945.000	1.206E3	945.000
A18	771.000	771.000	771.000	771.000	1.404E3	1.052E3	771.000	1.388E3	771.000
A19	795.000	795.000	795.000	795.000	1.320E3	1.218E3	795.000	1.216E3	795.000
A20	826.000	826.000	826.000	826.000	1.297E3	1.157E3	826.000	1.189E3	826.000
A21	803.000	803.000	803.000	803.000	1.174E3	1.026E3	803.000	1.056E3	803.000
A22	666.000	666.000	666.000	666.000	1.105E3	1.019E3	666.000	1.009E3	666.000
A23	.000	.000	.000	.000	1.105E3	993.000	.000	1.077E3	.000
A24	637.000	637.000	637.000	637.000	1.152E3	1.040E3	637.000	1.020E3	637.000
A25	870.000	870.000	870.000	870.000	1.167E3	1.125E3	870.000	1.025E3	870.000
A26	975.000	975.000	975.000	975.000	1.218E3	1.094E3	975.000	1.112E3	975.000
A27	922.000	922.000	922.000	922.000	1.427E3	1.237E3	922.000	1.243E3	922.000
A28	946.000	946.000	946.000	946.000	1.355E3	1.187E3	946.000	1.203E3	946.000
A29	1.153E3	1.153E3	1.153E3	1.153E3	1.498E3	1.378E3	1.153E3	1.564E3	1.153E3
A30	990.000	990.000	990.000	990.000	1.375E3	1.299E3	990.000	1.275E3	990.000
A31	.000	.000	.000	.000	1.105E3	993.000	.000	1.077E3	.000
A32	.000	.000	.000	.000	1.105E3	993.000	.000	1.077E3	.000
A33	.000	.000	.000	.000	1.105E3	993.000	.000	1.077E3	.000
A34	1.032E3	1.032E3	1.032E3	1.032E3	1.265E3	1.155E3	1.032E3	1.219E3	1.032E3
A35	1.044E3	1.044E3	1.044E3	1.044E3	1.391E3	1.263E3	1.044E3	1.269E3	1.044E3
A36	973.000	973.000	973.000	973.000	1.324E3	1.318E3	973.000	1.206E3	973.000
A37	.000	.000	.000	.000	1.105E3	993.000	.000	1.077E3	.000
A38	902.000	902.000	902.000	902.000	1.261E3	1.293E3	902.000	1.197E3	902.000
A39	872.000	872.000	872.000	872.000	1.167E3	1.139E3	872.000	1.179E3	872.000
A40	1.091E3	1.091E3	1.091E3	1.091E3	1.498E3	1.378E3	1.091E3	1.292E3	1.091E3
A41	945.000	945.000	945.000	945.000	1.364E3	1.234E3	945.000	1.210E3	945.000
A42	928.000	928.000	928.000	928.000	1.285E3	1.203E3	928.000	1.187E3	928.000
A43	982.000	982.000	982.000	982.000	1.313E3	1.213E3	982.000	1.263E3	982.000
A44	955.000	955.000	955.000	955.000	1.288E3	1.146E3	955.000	1.200E3	955.000
A45	907.000	907.000	907.000	907.000	1.320E3	1.210E3	907.000	1.140E3	907.000
A46	922.000	922.000	922.000	922.000	1.185E3	1.201E3	922.000	1.119E3	922.000

A26	A25	A24	A23	A22	A21	A20	A19	A18	A17	A16	A15	A14	A13	A12	A11	A10
975.000	870.000	637.000	.000	666.000	803.000	826.000	795.000	771.000	945.000	944.000	963.000	804.000	907.000	866.000	972.000	960.000
975.000	870.000	637.000	.000	666.000	803.000	826.000	795.000	771.000	945.000	944.000	963.000	804.000	907.000	866.000	972.000	960.000
975.000	870.000	637.000	.000	666.000	803.000	826.000	795.000	771.000	945.000	944.000	963.000	804.000	907.000	866.000	972.000	960.000
975.000	870.000	637.000	.000	666.000	803.000	826.000	795.000	771.000	945.000	944.000	963.000	804.000	907.000	866.000	972.000	960.000
1.218E3	1.167E3	1.152E3	1.105E3	1.105E3	1.174E3	1.297E3	1.320E3	1.404E3	1.276E3	1.395E3	1.366E3	1.277E3	1.352E3	1.413E3	1.411E3	1.291E3
1.094E3	1.125E3	1.040E3	993.000	1.019E3	1.026E3	1.157E3	1.218E3	1.052E3	1.170E3	1.179E3	1.146E3	1.049E3	1.150E3	1.279E3	1.169E3	1.145E3
975.000	870.000	637.000	.000	666.000	803.000	826.000	795.000	771.000	945.000	944.000	963.000	804.000	907.000	866.000	972.000	960.000
1.112E3	1.025E3	1.020E3	1.077E3	1.009E3	1.056E3	1.189E3	1.216E3	1.388E3	1.206E3	1.129E3	1.310E3	1.095E3	1.194E3	1.121E3	1.145E3	1.113E3
975.000	870.000	637.000	.000	666.000	803.000	826.000	795.000	771.000	945.000	944.000	963.000	804.000	907.000	866.000	972.000	960.000
1.009E3	1.008E3	905.000	960.000	1.034E3	1.065E3	1.134E3	1.107E3	1.177E3	1.125E3	1.136E3	1.147E3	960.000	961.000	958.000	856.000	.000
1.027E3	960.000	913.000	972.000	956.000	885.000	1.228E3	1.221E3	1.175E3	971.000	1.062E3	1.127E3	886.000	789.000	856.000	.000	856.000
955.000	950.000	909.000	866.000	922.000	961.000	1.116E3	1.109E3	1.151E3	957.000	988.000	1.169E3	892.000	789.000	.000	856.000	958.000
966.000	931.000	900.000	907.000	829.000	848.000	1.117E3	1.176E3	1.182E3	868.000	1.035E3	1.040E3	685.000	.000	789.000	789.000	961.000
985.000	940.000	901.000	804.000	822.000	891.000	1.070E3	993.000	969.000	847.000	848.000	763.000	.000	685.000	892.000	886.000	960.000
1.102E3	1.027E3	932.000	963.000	963.000	1.026E3	1.193E3	980.000	948.000	1.008E3	961.000	.000	763.000	1.040E3	1.169E3	1.127E3	1.147E3
977.000	930.000	833.000	944.000	874.000	917.000	1.092E3	885.000	873.000	831.000	.000	961.000	848.000	1.035E3	988.000	1.062E3	1.136E3
1.016E3	871.000	902.000	945.000	711.000	804.000	1.021E3	1.008E3	900.000	.000	831.000	1.008E3	847.000	868.000	957.000	971.000	1.125E3
1.010E3	1.023E3	934.000	771.000	819.000	920.000	935.000	746.000	.000	900.000	873.000	948.000	969.000	1.182E3	1.151E3	1.175E3	1.177E3
1.054E3	979.000	904.000	795.000	859.000	858.000	793.000	.000	746.000	1.008E3	885.000	980.000	993.000	1.176E3	1.109E3	1.221E3	1.107E3
961.000	982.000	943.000	826.000	850.000	945.000	.000	793.000	935.000	1.021E3	1.092E3	1.193E3	1.070E3	1.117E3	1.116E3	1.228E3	1.134E3
828.000	783.000	768.000	803.000	577.000	.000	945.000	858.000	920.000	804.000	917.000	1.026E3	891.000	848.000	961.000	885.000	1.065E3
909.000	846.000	669.000	666.000	.000	577.000	850.000	859.000	819.000	711.000	874.000	963.000	822.000	829.000	922.000	956.000	1.034E3
975.000	870.000	637.000	.000	666.000	803.000	826.000	795.000	771.000	945.000	944.000	963.000	804.000	907.000	866.000	972.000	960.000
644.000	743.000	.000	637.000	669.000	768.000	943.000	904.000	934.000	902.000	833.000	932.000	901.000	900.000	909.000	913.000	905.000
609.000	.000	743.000	870.000	846.000	783.000	982.000	979.000	1.023E3	871.000	930.000	1.027E3	940.000	931.000	950.000	960.000	1.008E3
.000	609.000	644.000	975.000	909.000	828.000	961.000	1.054E3	1.010E3	1.016E3	977.000	1.102E3	985.000	966.000	955.000	1.027E3	1.009E3
963.000	880.000	915.000	922.000	1.006E3	855.000	1.304E3	1.215E3	1.135E3	1.161E3	1.098E3	1.275E3	1.226E3	1.073E3	1.144E3	1.170E3	1.210E3
1.095E3	1.072E3	1.007E3	946.000	1.032E3	1.081E3	1.292E3	1.103E3	1.055E3	1.221E3	1.104E3	1.173E3	1.068E3	1.141E3	1.170E3	1.146E3	1.252E3
1.298E3	1.237E3	1.280E3	1.153E3	1.161E3	1.196E3	1.453E3	1.410E3	1.388E3	1.418E3	1.433E3	1.362E3	1.315E3	1.352E3	1.399E3	1.387E3	1.531E3
755.000	806.000	823.000	990.000	988.000	975.000	1.066E3	1.043E3	1.183E3	1.073E3	988.000	1.193E3	1.154E3	1.101E3	1.058E3	1.106E3	1.180E3
975.000	870.000	637.000	.000	666.000	803.000	826.000	795.000	771.000	945.000	944.000	963.000	804.000	907.000	866.000	972.000	960.000
975.000	870.000	637.000	.000	666.000	803.000	826.000	795.000	771.000	945.000	944.000	963.000	804.000	907.000	866.000	972.000	960.000
975.000	870.000	637.000	.000	666.000	803.000	826.000	795.000	771.000	945.000	944.000	963.000	804.000	907.000	866.000	972.000	960.000
931.000	876.000	933.000	1.032E3	928.000	881.000	1.108E3	1.113E3	1.055E3	1.029E3	1.042E3	1.177E3	1.042E3	1.003E3	1.120E3	1.096E3	1.236E3
1.113E3	988.000	967.000	1.044E3	984.000	1.013E3	1.144E3	1.147E3	1.181E3	1.077E3	1.076E3	1.207E3	1.158E3	1.135E3	1.170E3	1.180E3	1.256E3
1.038E3	945.000	946.000	973.000	1.005E3	982.000	1.101E3	1.186E3	1.132E3	1.110E3	1.111E3	1.262E3	1.139E3	1.146E3	1.147E3	1.223E3	1.191E3
975.000	870.000	637.000	.000	666.000	803.000	826.000	795.000	771.000	945.000	944.000	963.000	804.000	907.000	866.000	972.000	960.000
1.015E3	934.000	891.000	902.000	990.000	955.000	1.122E3	1.031E3	1.063E3	1.067E3	1.038E3	1.051E3	1.062E3	1.141E3	1.142E3	1.180E3	1.280E3
869.000	802.000	869.000	872.000	904.000	933.000	1.096E3	959.000	1.029E3	949.000	1.022E3	1.033E3	984.000	1.003E3	1.032E3	1.042E3	1.230E3
1.082E3	1.029E3	1.056E3	1.091E3	1.087E3	952.000	1.261E3	1.260E3	1.246E3	1.070E3	1.149E3	1.264E3	1.145E3	1.142E3	1.175E3	1.201E3	1.403E3
970.000	961.000	922.000	945.000	949.000	874.000	1.139E3	1.264E3	1.204E3	1.034E3	1.027E3	1.150E3	1.009E3	1.034E3	973.000	1.037E3	1.235E3
917.000	984.000	863.000	928.000	940.000	945.000	1.236E3	1.091E3	1.071E3	975.000	1.078E3	1.151E3	966.000	1.037E3	894.000	1.096E3	1.170E3
905.000	926.000	931.000	982.000	1.012E3	975.000	1.164E3	1.069E3	1.099E3	1.001E3	1.102E3	1.227E3	1.072E3	1.005E3	1.034E3	1.054E3	1.282E3
912.000	947.000	974.000	955.000	1.035E3	928.000	1.163E3	1.238E3	1.216E3	1.032E3	1.111E3	1.200E3	1.081E3	1.060E3	979.000	1.149E3	1.303E3
984.000	1.053E3	916.000	907.000	921.000	876.000	1.135E3	1.282E3	1.210E3	1.106E3	1.077E3	1.124E3	1.037E3	1.086E3	1.073E3	1.135E3	1.253E3
937.000	1.042E3	889.000	922.000	948.000	1.005E3	1.168E3	1.155E3	1.207E3	1.073E3	1.130E3	1.199E3	1.084E3	1.087E3	1.012E3	1.216E3	1.196E3

A43	A42	A41	A40	A39	A38	A37	A36	A35	A34	A33	A32	A31	A30	A29	A28	A27
982.000	928.000	945.000	1.091E3	872.000	902.000	.000	973.000	1.044E3	1.032E3	.000	.000	.000	990.000	1.153E3	946.000	922.000
982.000	928.000	945.000	1.091E3	872.000	902.000	.000	973.000	1.044E3	1.032E3	.000	.000	.000	990.000	1.153E3	946.000	922.000
982.000	928.000	945.000	1.091E3	872.000	902.000	.000	973.000	1.044E3	1.032E3	.000	.000	.000	990.000	1.153E3	946.000	922.000
982.000	928.000	945.000	1.091E3	872.000	902.000	.000	973.000	1.044E3	1.032E3	.000	.000	.000	990.000	1.153E3	946.000	922.000
1.313E3	1.285E3	1.364E3	1.498E3	1.167E3	1.261E3	1.105E3	1.324E3	1.391E3	1.265E3	1.105E3	1.105E3	1.105E3	1.375E3	1.498E3	1.355E3	1.427E3
1.213E3	1.203E3	1.234E3	1.378E3	1.139E3	1.293E3	993.000	1.318E3	1.263E3	1.155E3	993.000	993.000	993.000	1.299E3	1.378E3	1.187E3	1.237E3
982.000	928.000	945.000	1.091E3	872.000	902.000	.000	973.000	1.044E3	1.032E3	.000	.000	.000	990.000	1.153E3	946.000	922.000
1.263E3	1.187E3	1.210E3	1.292E3	1.179E3	1.197E3	1.077E3	1.206E3	1.269E3	1.219E3	1.077E3	1.077E3	1.077E3	1.275E3	1.564E3	1.203E3	1.243E3
982.000	928.000	945.000	1.091E3	872.000	902.000	.000	973.000	1.044E3	1.032E3	.000	.000	.000	990.000	1.153E3	946.000	922.000
1.282E3	1.170E3	1.235E3	1.403E3	1.230E3	1.280E3	960.000	1.191E3	1.256E3	1.236E3	960.000	960.000	960.000	1.180E3	1.531E3	1.252E3	1.210E3
1.054E3	1.096E3	1.037E3	1.201E3	1.042E3	1.180E3	972.000	1.223E3	1.180E3	1.096E3	972.000	972.000	972.000	1.106E3	1.387E3	1.146E3	1.170E3
1.034E3	894.000	973.000	1.175E3	1.032E3	1.142E3	866.000	1.147E3	1.170E3	1.120E3	866.000	866.000	866.000	1.058E3	1.399E3	1.170E3	1.144E3
1.005E3	1.037E3	1.034E3	1.142E3	1.003E3	1.141E3	907.000	1.146E3	1.135E3	1.003E3	907.000	907.000	907.000	1.101E3	1.352E3	1.141E3	1.073E3
1.072E3	966.000	1.009E3	1.145E3	984.000	1.062E3	804.000	1.139E3	1.158E3	1.042E3	804.000	804.000	804.000	1.154E3	1.315E3	1.068E3	1.226E3
1.227E3	1.151E3	1.150E3	1.264E3	1.033E3	1.051E3	963.000	1.262E3	1.207E3	1.177E3	963.000	963.000	963.000	1.193E3	1.362E3	1.173E3	1.275E3
1.102E3	1.078E3	1.027E3	1.149E3	1.022E3	1.038E3	944.000	1.111E3	1.076E3	1.042E3	944.000	944.000	944.000	988.000	1.433E3	1.104E3	1.098E3
1.001E3	975.000	1.034E3	1.070E3	949.000	1.067E3	945.000	1.110E3	1.077E3	1.029E3	945.000	945.000	945.000	1.073E3	1.418E3	1.221E3	1.161E3
1.099E3	1.071E3	1.204E3	1.246E3	1.029E3	1.063E3	771.000	1.132E3	1.181E3	1.055E3	771.000	771.000	771.000	1.183E3	1.388E3	1.055E3	1.135E3
1.069E3	1.091E3	1.264E3	1.260E3	959.000	1.031E3	795.000	1.186E3	1.147E3	1.113E3	795.000	795.000	795.000	1.043E3	1.410E3	1.103E3	1.215E3
1.164E3	1.236E3	1.139E3	1.261E3	1.096E3	1.122E3	826.000	1.101E3	1.144E3	1.108E3	826.000	826.000	826.000	1.066E3	1.453E3	1.292E3	1.304E3
975.000	945.000	874.000	952.000	933.000	955.000	803.000	982.000	1.013E3	881.000	803.000	803.000	803.000	975.000	1.196E3	1.081E3	855.000
1.012E3	940.000	949.000	1.087E3	904.000	990.000	666.000	1.005E3	984.000	928.000	666.000	666.000	666.000	988.000	1.161E3	1.032E3	1.006E3
982.000	928.000	945.000	1.091E3	872.000	902.000	.000	973.000	1.044E3	1.032E3	.000	.000	.000	990.000	1.153E3	946.000	922.000
931.000	863.000	922.000	1.056E3	869.000	891.000	637.000	946.000	967.000	933.000	637.000	637.000	637.000	823.000	1.280E3	1.007E3	915.000
926.000	984.000	961.000	1.029E3	802.000	934.000	870.000	945.000	988.000	876.000	870.000	870.000	870.000	806.000	1.237E3	1.072E3	880.000
905.000	917.000	970.000	1.082E3	869.000	1.015E3	975.000	1.038E3	1.113E3	931.000	975.000	975.000	975.000	755.000	1.298E3	1.095E3	963.000
1.146E3	1.124E3	1.043E3	1.191E3	1.040E3	1.102E3	922.000	1.215E3	1.228E3	1.120E3	922.000	922.000	922.000	1.168E3	1.209E3	1.122E3	.000
1.020E3	1.090E3	1.199E3	1.209E3	1.012E3	1.106E3	946.000	1.147E3	1.120E3	1.128E3	946.000	946.000	946.000	1.108E3	995.000	.000	1.122E3
1.283E3	1.195E3	1.160E3	1.328E3	1.265E3	1.351E3	1.153E3	1.302E3	1.375E3	1.361E3	1.153E3	1.153E3	1.153E3	1.301E3	.000	995.000	1.209E3
992.000	1.162E3	1.033E3	1.159E3	1.032E3	988.000	990.000	949.000	1.074E3	804.000	990.000	990.000	990.000	.000	1.301E3	1.108E3	1.168E3
982.000	928.000	945.000	1.091E3	872.000	902.000	.000	973.000	1.044E3	1.032E3	.000	.000	.000	990.000	1.153E3	946.000	922.000
982.000	928.000	945.000	1.091E3	872.000	902.000	.000	973.000	1.044E3	1.032E3	.000	.000	.000	990.000	1.153E3	946.000	922.000
982.000	928.000	945.000	1.091E3	872.000	902.000	.000	973.000	1.044E3	1.032E3	.000	.000	.000	990.000	1.153E3	946.000	922.000
1.100E3	1.146E3	1.101E3	1.177E3	924.000	804.000	1.032E3	863.000	824.000	.000	1.032E3	1.032E3	1.032E3	804.000	1.361E3	1.128E3	1.120E3
1.094E3	1.060E3	1.131E3	1.037E3	804.000	888.000	1.044E3	757.000	.000	824.000	1.044E3	1.044E3	1.044E3	1.074E3	1.375E3	1.120E3	1.228E3
1.023E3	1.019E3	1.082E3	1.156E3	949.000	891.000	973.000	.000	757.000	863.000	973.000	973.000	973.000	949.000	1.302E3	1.147E3	1.215E3
982.000	928.000	945.000	1.091E3	872.000	902.000	.000	973.000	1.044E3	1.032E3	.000	.000	.000	990.000	1.153E3	946.000	922.000
972.000	1.022E3	1.051E3	1.043E3	766.000	.000	902.000	891.000	888.000	804.000	902.000	902.000	902.000	988.000	1.351E3	1.106E3	1.102E3
450.000	842.000	1.077E3	869.000	.000	766.000	872.000	949.000	804.000	924.000	872.000	872.000	872.000	1.032E3	1.265E3	1.012E3	1.040E3
945.000	1.117E3	774.000	.000	869.000	1.043E3	1.091E3	1.156E3	1.037E3	1.177E3	1.091E3	1.091E3	1.091E3	1.159E3	1.328E3	1.209E3	1.191E3
1.001E3	801.000	.000	774.000	1.077E3	1.051E3	945.000	1.082E3	1.131E3	1.101E3	945.000	945.000	945.000	1.033E3	1.160E3	1.199E3	1.043E3
836.000	.000	801.000	1.117E3	842.000	1.022E3	928.000	1.019E3	1.060E3	1.146E3	928.000	928.000	928.000	1.162E3	1.195E3	1.090E3	1.124E3
.000	836.000	1.001E3	945.000	450.000	972.000	982.000	1.023E3	1.094E3	1.100E3	982.000	982.000	982.000	992.000	1.283E3	1.020E3	1.146E3
839.000	919.000	702.000	556.000	951.000	1.045E3	955.000	1.132E3	1.083E3	1.089E3	955.000	955.000	955.000	1.073E3	1.214E3	1.045E3	1.091E3
1.187E3	947.000	332.000	892.000	1.119E3	1.057E3	907.000	1.134E3	1.131E3	1.153E3	907.000	907.000	907.000	1.133E3	1.146E3	1.093E3	1.055E3
994.000	330.000	929.000	1.209E3	950.000	1.078E3	922.000	1.051E3	1.054E3	1.152E3	922.000	922.000	922.000	1.150E3	1.145E3	1.094E3	1.226E3

A44	A45	A46
955.000	907.000	922.000
955.000	907.000	922.000
955.000	907.000	922.000
955.000	907.000	922.000
1.288E3	1.320E3	1.185E3
1.146E3	1.210E3	1.201E3
955.000	907.000	922.000
1.200E3	1.140E3	1.119E3
955.000	907.000	922.000
1.303E3	1.253E3	1.196E3
1.149E3	1.135E3	1.216E3
979.000	1.073E3	1.012E3
1.060E3	1.086E3	1.087E3
1.081E3	1.037E3	1.084E3
1.200E3	1.124E3	1.199E3
1.111E3	1.077E3	1.130E3
1.032E3	1.106E3	1.073E3
1.216E3	1.210E3	1.207E3
1.238E3	1.282E3	1.155E3
1.163E3	1.135E3	1.168E3
928.000	876.000	1.005E3
1.035E3	921.000	948.000
955.000	907.000	922.000
974.000	916.000	889.000
947.000	1.053E3	1.042E3
912.000	984.000	937.000
1.091E3	1.055E3	1.226E3
1.045E3	1.093E3	1.094E3
1.214E3	1.146E3	1.145E3
1.073E3	1.133E3	1.150E3
955.000	907.000	922.000
955.000	907.000	922.000
955.000	907.000	922.000
1.089E3	1.153E3	1.152E3
1.083E3	1.131E3	1.054E3
1.132E3	1.134E3	1.051E3
955.000	907.000	922.000
1.045E3	1.057E3	1.078E3
951.000	1.119E3	950.000
556.000	892.000	1.209E3
702.000	332.000	929.000
919.000	947.000	330.000
839.000	1.187E3	994.000
.000	774.000	947.000
774.000	.000	929.000
947.000	929.000	.000

Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	33	37	.000	0	0	2
2	1	33	.000	0	1	4
3	31	32	.000	0	0	4
4	1	31	.000	2	3	6
5	9	23	.000	0	0	6
6	1	9	.000	4	5	8
7	4	7	.000	0	0	8
8	1	4	.000	6	7	10
9	2	3	.000	0	0	10
10	1	2	.000	8	9	17
11	42	46	330.000	0	0	31
12	41	45	332.000	0	0	23
13	39	43	450.000	0	0	31
14	40	44	556.000	0	0	23
15	21	22	577.000	0	0	19
16	25	26	609.000	0	0	22
17	1	24	637.000	10	0	19
18	13	14	685.000	0	0	27
19	1	21	733.167	17	15	25
20	18	19	746.000	0	0	25
21	35	36	757.000	0	0	30
22	25	30	780.500	16	0	34
23	40	41	785.500	14	12	39
24	34	38	804.000	0	0	30
25	1	18	804.286	19	20	29
26	16	17	831.000	0	0	32
27	11	13	837.500	0	18	28
28	11	12	845.667	27	0	33
29	1	20	847.000	25	0	32
30	34	35	866.500	24	21	38
31	39	42	905.500	13	11	35
32	1	16	929.382	29	26	33
33	1	11	932.355	32	28	34
34	1	25	956.710	33	22	35
35	1	39	980.462	34	31	37
36	28	29	995.000	0	0	44
37	1	15	1021.167	35	0	38
38	1	34	1028.379	37	30	39
39	1	40	1038.357	38	23	40
40	1	27	1059.256	39	0	41
41	1	10	1089.175	40	0	43
42	5	8	1120.000	0	0	45
43	1	6	1127.561	41	0	44
44	1	28	1171.595	43	36	45
45	1	5	1210.386	44	42	0

Table 10. One-sample T-test of Surveyed Participants for Barr Conglomerate Mines using SPSS 16.0 (Source: Author)

One-Sample Statistics										
Test Value = 5										
	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
									Lower	Upper
A1	440	4.1727	.93145	.04440	-18.630	439	.000	-.82727	-.9145	-.7400
A2	440	3.7023	1.00341	.04784	-27.129	439	.000	-1.29773	-1.3917	-1.2037
A3	440	4.0205	.78832	.03758	-26.064	439	.000	-.97955	-1.0534	-.9057
A4	440	3.6477	.49691	.02369	-57.084	439	.000	-1.35227	-1.3988	-1.3057
A5	440	3.8250	.68755	.03278	-35.848	439	.000	-1.17500	-1.2394	-1.1106
A6	440	3.9659	.94071	.04485	-23.058	439	.000	-1.03409	-1.1222	-.9459
A7	440	4.1909	.83211	.03967	-20.396	439	.000	-.80909	-.8871	-.7311
A8	440	4.3114	.79912	.03810	-18.076	439	.000	-.68864	-.7635	-.6138
A9	440	3.9659	.56570	.02697	-38.344	439	.000	-1.03409	-1.0871	-.9811
A10	440	3.4614	.89969	.04289	-35.873	439	.000	-1.53864	-1.6229	-1.4543
A11	440	3.7341	.83474	.03979	-31.811	439	.000	-1.26591	-1.3441	-1.1877
A12	440	4.0659	.86054	.04102	-22.769	439	.000	-.93409	-1.0147	-.8535
A13	440	3.7432	.58059	.02768	-45.408	439	.000	-1.25682	-1.3112	-1.2024
A14	440	3.7818	1.51158	.07206	-16.905	439	.000	-1.21818	-1.3598	-1.0766
A15	440	4.2727	.76850	.03664	-19.851	439	.000	-.72727	-.7993	-.6553
A16	440	3.8795	.69593	.03318	-33.772	439	.000	-1.12045	-1.1857	-1.0552
A17	440	3.3773	.60252	.02872	-56.493	439	.000	-1.62273	-1.6792	-1.5663
A18	440	3.8205	.72824	.03472	-33.976	439	.000	-1.17955	-1.2478	-1.1113
A19	440	4.0295	.96713	.04611	-21.048	439	.000	-.97045	-1.0611	-.8798
A20	440	4.0250	.87320	.04163	-23.422	439	.000	-.97500	-1.0568	-.8932
A21	440	3.7182	.94140	.04488	-28.561	439	.000	-1.28182	-1.3700	-1.1936
A22	440	4.1864	.82213	.03919	-20.759	439	.000	-.81364	-.8907	-.7366
A23	440	3.7409	.78201	.03728	-33.773	439	.000	-1.25909	-1.3324	-1.1858
A24	440	3.2682	1.19638	.05704	-30.364	439	.000	-1.73182	-1.8439	-1.6197
A25	440	3.5727	.83717	.03991	-35.762	439	.000	-1.42727	-1.5057	-1.3488
A26	440	4.0591	.99939	.04764	-19.749	439	.000	-.94091	-1.0345	-.8473
A27	440	4.1591	.74989	.03575	-23.522	439	.000	-.84091	-.9112	-.7706
A28	440	3.9818	.62202	.02965	-34.336	439	.000	-1.01818	-1.0765	-.9599
A29	440	3.4705	.90508	.04315	-35.449	439	.000	-1.52955	-1.6143	-1.4447
A30	440	3.6705	.87384	.04166	-31.915	439	.000	-1.32955	-1.4114	-1.2477
A31	440	3.9818	.86155	.04107	-24.790	439	.000	-1.01818	-1.0989	-.9375
A32	440	3.7841	.62683	.02988	-40.689	439	.000	-1.21591	-1.2746	-1.1572
A33	440	3.7841	1.47453	.07030	-17.297	439	.000	-1.21591	-1.3541	-1.0778
A34	440	4.2182	.81144	.03868	-20.210	439	.000	-.78182	-.8578	-.7058
A35	440	3.9091	.71808	.03423	-31.867	439	.000	-1.09091	-1.1582	-1.0236
A36	440	3.4455	.66252	.03158	-49.219	439	.000	-1.55455	-1.6166	-1.4925
A37	440	3.9114	.59524	.02838	-38.363	439	.000	-1.08864	-1.1444	-1.0329
A38	440	3.4773	1.01220	.04825	-31.556	439	.000	-1.52273	-1.6176	-1.4279
A39	440	3.7750	.85740	.04087	-29.969	439	.000	-1.22500	-1.3053	-1.1447
A40	440	4.0136	.87214	.04158	-23.723	439	.000	-.98636	-1.0681	-.9046
A41	440	3.7386	.60924	.02904	-43.429	439	.000	-1.26136	-1.3184	-1.2043
A42	440	3.7818	1.45944	.06958	-17.509	439	.000	-1.21818	-1.3549	-1.0814
A43	440	4.2182	.77114	.03676	-21.267	439	.000	-.78182	-.8541	-.7096
A44	440	3.8955	.69687	.03322	-33.247	439	.000	-1.10455	-1.1698	-1.0393
A45	440	3.3977	.65683	.03131	-51.169	439	.000	-1.60227	-1.6638	-1.5407
A46	440	3.4091	.61560	.02935	-54.209	439	.000	-1.59091	-1.6486	-1.5332

Table 11. Chi-Squire Test of Surveyed Participants for Barr Conglomerate Mines using SPSS 16.0 (Source: Author)

	Chi-Square	df	Asymp. Sig.
A1	3.553E2[a]	4	.000
A2	3.536E2[a]	4	.000
A3	2.171E2[b]	3	.000
A4	2.769E2[c]	2	.000
A5	73.723[c]	2	.000
A6	2.320E2[a]	4	.000
A7	1.771E2[b]	3	.000
A8	72.986[c]	2	.000
A9	2.381E2[c]	2	.000
A10	2.858E2[a]	4	.000
A11	1.323E2[b]	3	.000
A12	1.360E2[b]	3	.000
A13	8.258E2[a]	4	.000
A14	2.728E2[a]	4	.000
A15	2.136E2[b]	3	.000
A16	2.714E2[b]	3	.000
A17	5.875E2[a]	4	.000
A18	2.168E2[b]	3	.000
A19	2.460E2[a]	4	.000
A20	1.399E2[b]	3	.000
A21	2.539E2[a]	4	.000
A22	26.486[c]	2	.000
A23	1.947E2[b]	3	.000
A24	71.841[a]	4	.000
A25	4.246E2[a]	4	.000
A26	2.707E2[a]	4	.000
A27	1.931E2[b]	3	.000
A28	1.558E2[c]	2	.000
A29	2.709E2[a]	4	.000
A30	2.461E2[a]	4	.000
A31	2.609E2[a]	4	.000
A32	7.185E2[a]	4	.000
A33	2.447E2[a]	4	.000
A34	3.439E2[a]	4	.000
A35	2.392E2[b]	3	.000
A36	5.141E2[a]	4	.000
A37	4.278E2[b]	3	.000
A38	2.123E2[a]	4	.000
A39	1.191E2[b]	3	.000
A40	2.657E2[a]	4	.000
A41	8.198E2[a]	4	.000
A42	2.345E2[a]	4	.000
A43	1.937E2[b]	3	.000
A44	2.721E2[b]	3	.000
A45	5.252E2[a]	4	.000
A46	5.650E2[a]	4	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 88.0.
b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 110.0.
c. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 146.7.

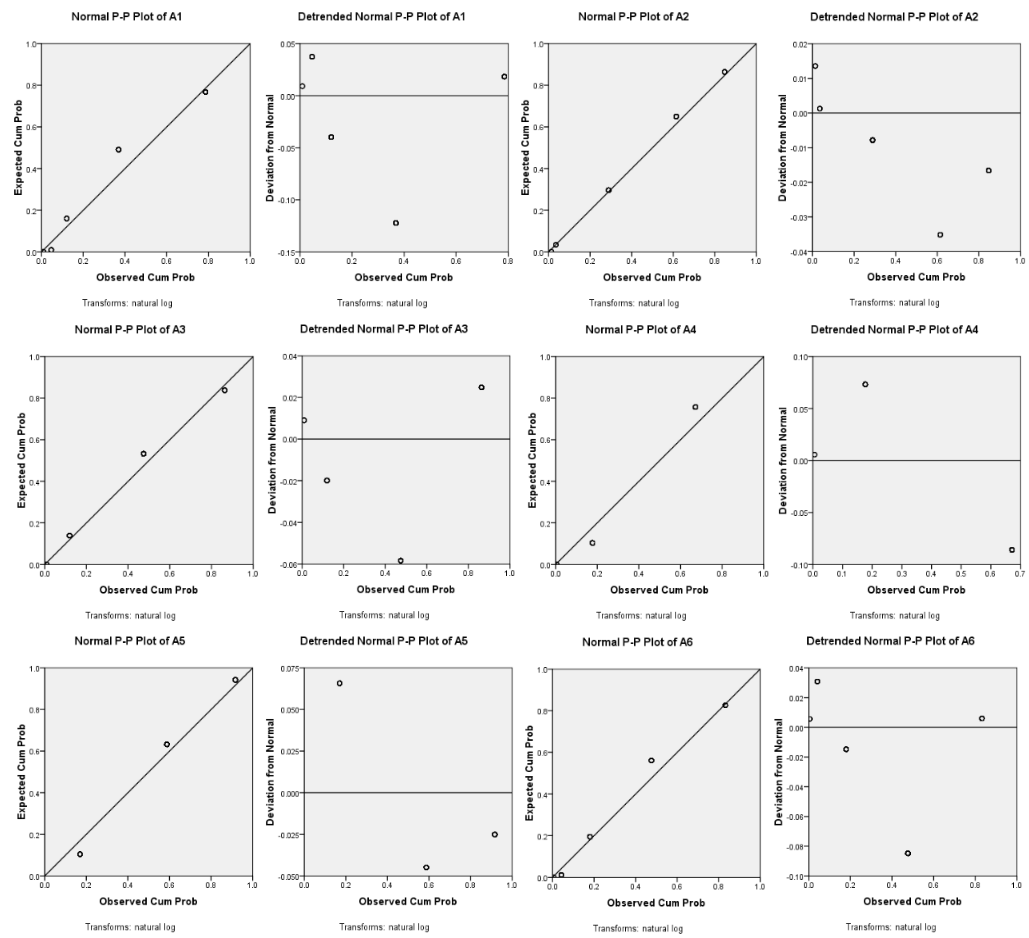
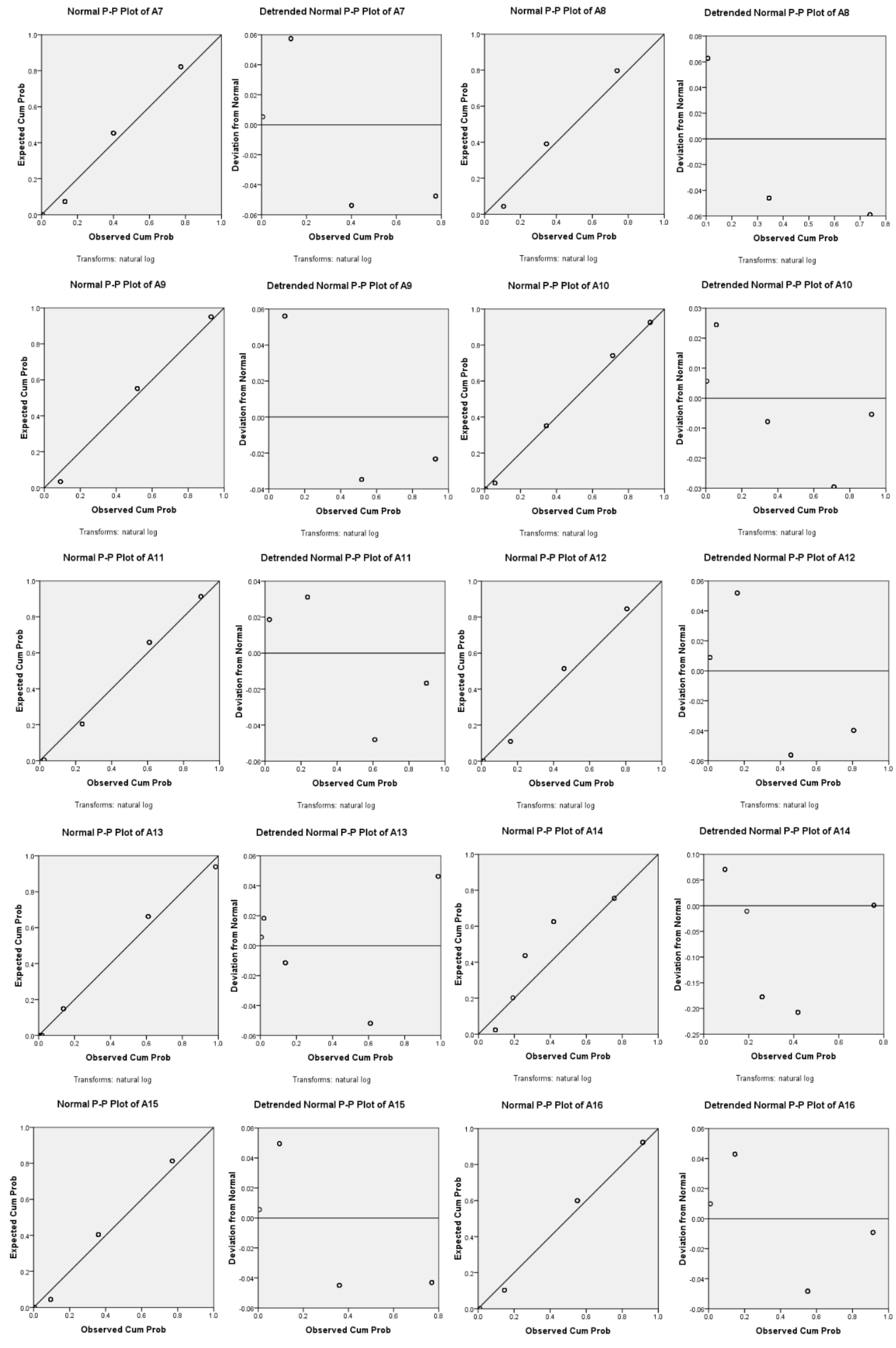
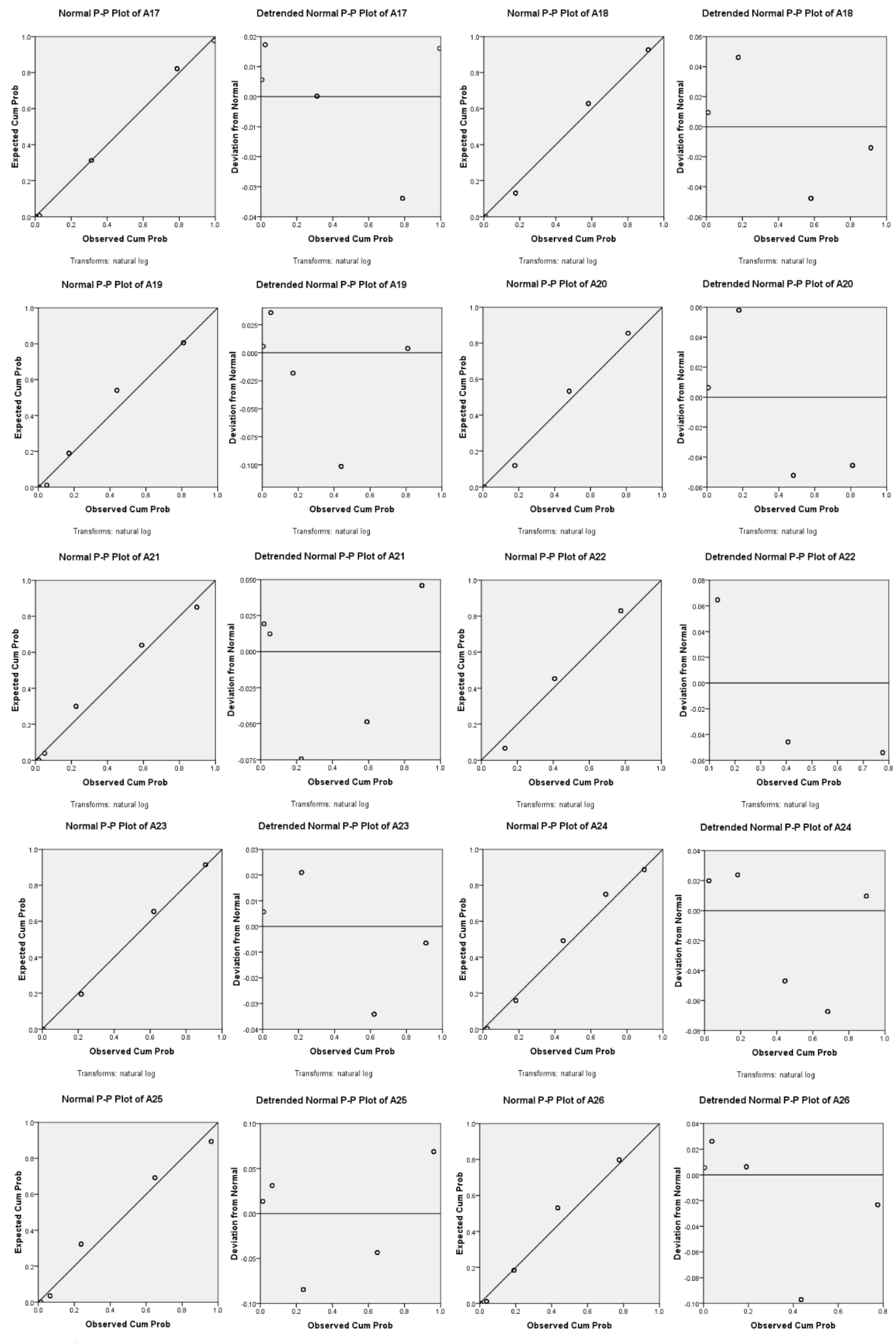


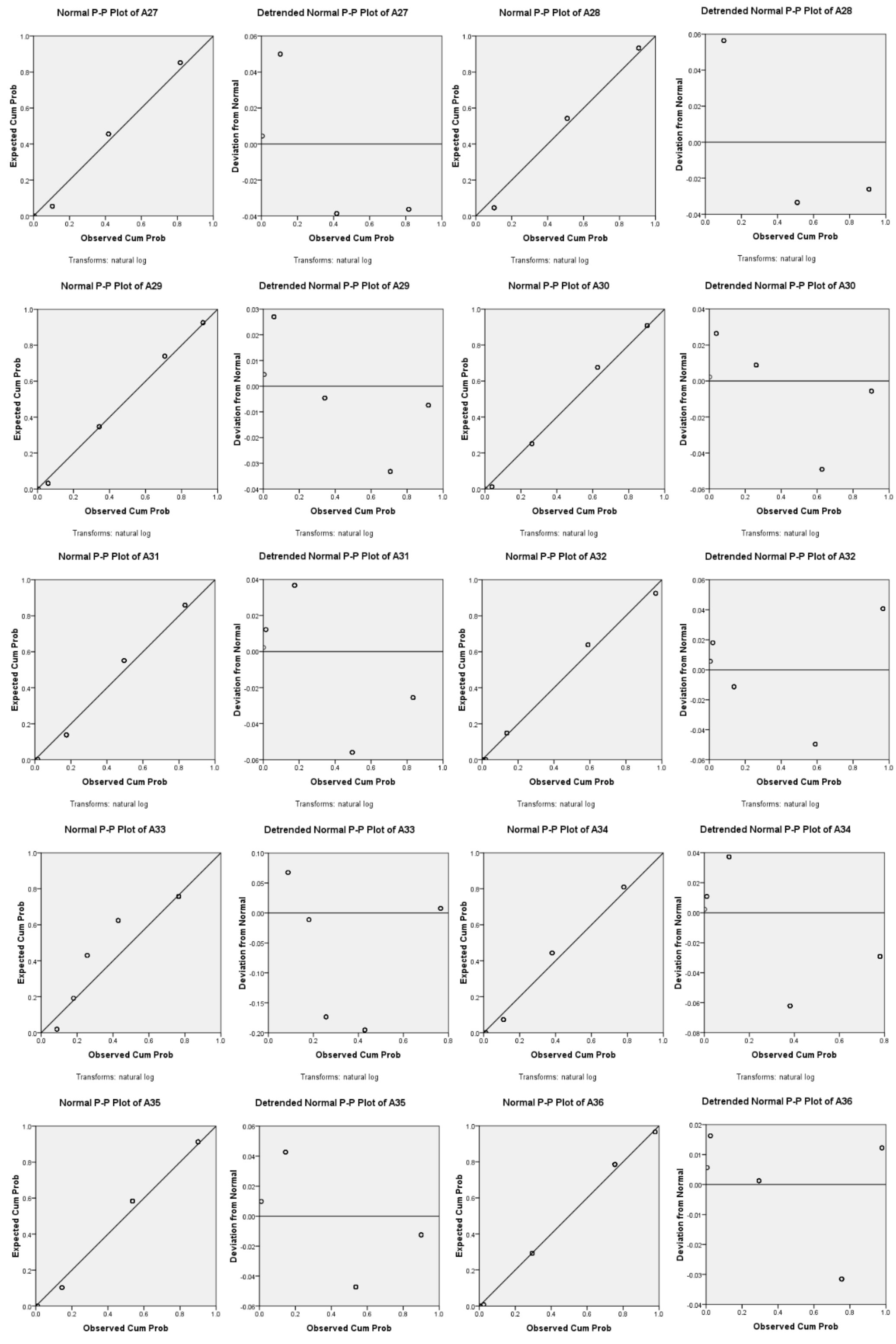
Figure 8. Probability distribution of visitor satisfaction and stakeholder perception variables for Barr Conglomerate Mines. SPSS 16.0 analysis of Likert-scale responses (n =440) (Source: Author)



Continuous of Figure 8. Probability distribution of visitor satisfaction and stakeholder perception variables for Barr Conglomerate Mines. SPSS 16.0 analysis of Likert-scale responses (n =440) (Source: Author)



Continuous of Figure 8. Probability distribution of visitor satisfaction and stakeholder perception variables for Barr Conglomerate Mines. SPSS 16.0 analysis of Likert-scale responses (n =440) (Source: Author)



Continuous of Figure 8. Probability distribution of visitor satisfaction and stakeholder perception variables for Barr Conglomerate Mines. SPSS 16.0 analysis of Likert-scale responses (n =440) (Source: Author)

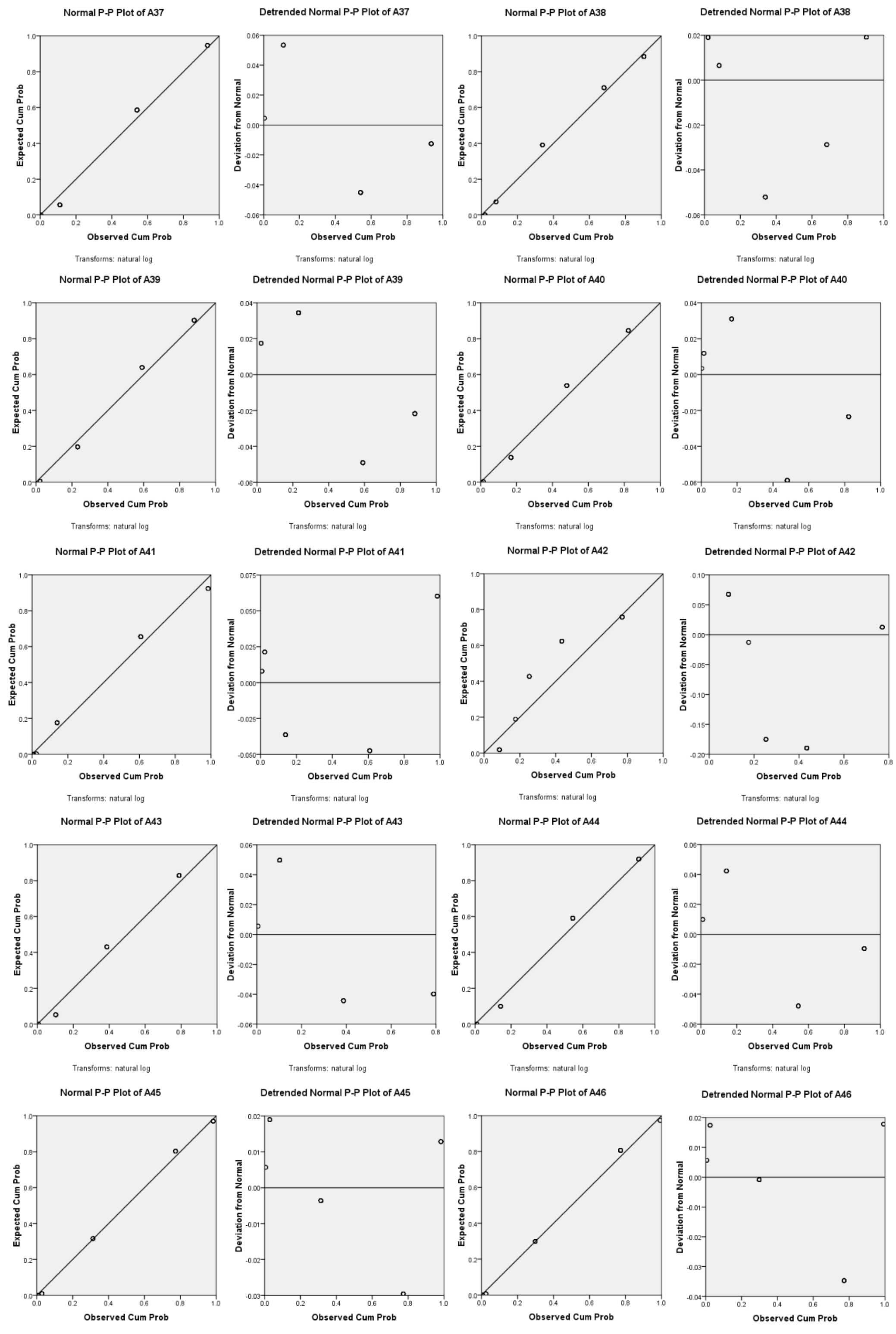


Figure 8. Probability distribution of visitor satisfaction and stakeholder perception variables for Barr Conglomerate Mines. SPSS 16.0 analysis of Likert-scale responses (n =440) (Source: Author)

Table 12. One-Sample Kolmogorov-Smirnov Test (Normal and Poisson) for Barr Conglomerate Mines using SPSS 16.0 (Source: Author)

	N	Normal Parameters[a]		Most Extreme Differences			Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
		Mean	Std.	Absolut	Positiv	Negativ		
A1	440	4.1727	.93145	.263	.187	-.263	5.513	.000
A2	440	3.7023	1.00341	.292	.292	-.207	6.127	.000
A3	440	4.0205	.78832	.269	.238	-.269	5.647	.000
A4	440	3.6477	.49691	.418	.247	-.418	8.760	.000
A5	440	3.8250	.68755	.262	.236	-.262	5.492	.000
A6	440	3.9659	.94071	.228	.151	-.228	4.784	.000
A7	440	4.1909	.83211	.285	.174	-.285	5.969	.000
A8	440	4.3114	.79912	.328	.194	-.328	6.887	.000
A9	440	3.9659	.56570	.347	.333	-.347	7.274	.000
A1	440	3.4614	.89969	.278	.278	-.199	5.827	.000
A1	440	3.7341	.83474	.235	.235	-.200	4.938	.000
A1	440	4.0659	.86054	.248	.195	-.248	5.192	.000
A1	440	3.7432	.58059	.423	.302	-.423	8.876	.000
A1	440	3.7818	1.51158	.276	.210	-.276	5.794	.000
A1	440	4.2727	.76850	.287	.180	-.287	6.022	.000
A1	440	3.8795	.69593	.296	.261	-.296	6.209	.000
A1	440	3.3773	.60252	.321	.321	-.263	6.728	.000
A1	440	3.8205	.72824	.263	.230	-.263	5.523	.000
A1	440	4.0295	.96713	.231	.158	-.231	4.845	.000
A2	440	4.0250	.87320	.247	.221	-.247	5.191	.000
A2	440	3.7182	.94140	.231	.178	-.231	4.852	.000
A2	440	4.1864	.82213	.287	.187	-.287	6.011	.000
A2	440	3.7409	.78201	.251	.251	-.207	5.265	.000
A2	440	3.2682	1.19638	.176	.176	-.159	3.689	.000
A2	440	3.5727	.83717	.325	.232	-.325	6.810	.000
A2	440	4.0591	.99939	.274	.173	-.274	5.758	.000
A2	440	4.1591	.74989	.235	.218	-.235	4.926	.000
A2	440	3.9818	.62202	.309	.304	-.309	6.490	.000
A2	440	3.4705	.90508	.273	.273	-.193	5.735	.000
A3	440	3.6705	.87384	.226	.226	-.199	4.746	.000
A3	440	3.9818	.86155	.213	.196	-.213	4.472	.000
A3	440	3.7841	.62683	.389	.299	-.389	8.166	.000
A3	440	3.7841	1.47453	.263	.205	-.263	5.525	.000
A3	440	4.2182	.81144	.271	.168	-.271	5.684	.000
A3	440	3.9091	.71808	.280	.252	-.280	5.872	.000
A3	440	3.4455	.66252	.299	.299	-.249	6.279	.000
A3	440	3.9114	.59524	.348	.311	-.348	7.296	.000
A3	440	3.4773	1.01220	.236	.236	-.196	4.949	.000
A3	440	3.7750	.85740	.235	.235	-.185	4.933	.000
A4	440	4.0136	.87214	.226	.191	-.226	4.730	.000
A4	440	3.7386	.60924	.421	.304	-.421	8.822	.000
A4	440	3.7818	1.45944	.255	.202	-.255	5.346	.000
A4	440	4.2182	.77114	.265	.191	-.265	5.561	.000
A4	440	3.8955	.69687	.296	.263	-.296	6.209	.000
A4	440	3.3977	.65683	.307	.307	-.241	6.442	.000
A4	440	3.4091	.61560	.306	.306	-.272	6.417	.000

a. Test distribution is Normal.

	N	Poisson Mean	Most Extreme Differences			Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
			Absolut	Positiv	Negativ		
A1	440	4.1727	.242	.242	-.237	5.085	.000
A2	440	3.7023	.242	.170	-.242	5.073	.000
A3	440	4.0205	.219	.218	-.219	4.598	.000
A4	440	3.6477	.303	.303	-.285	6.350	.000
A5	440	3.8250	.265	.188	-.265	5.556	.000
A6	440	3.9659	.210	.210	-.170	4.396	.000
A7	440	4.1909	.245	.245	-.202	5.147	.000
A8	440	4.3114	.265	.265	-.196	5.563	.000
A9	440	3.9659	.263	.221	-.263	5.514	.000
A1	440	3.4614	.224	.137	-.224	4.688	.000
A1	440	3.7341	.234	.175	-.234	4.914	.000
A1	440	4.0659	.225	.225	-.210	4.725	.000
A1	440	3.7432	.294	.294	-.251	6.164	.000
A1	440	3.7818	.182	.182	-.158	3.813	.000
A1	440	4.2727	.259	.259	-.205	5.429	.000
A1	440	3.8795	.238	.196	-.238	4.995	.000
A1	440	3.3773	.308	.243	-.308	6.456	.000
A1	440	3.8205	.247	.187	-.247	5.190	.000
A1	440	4.0295	.220	.220	-.171	4.604	.000
A2	440	4.0250	.221	.219	-.221	4.632	.000
A2	440	3.7182	.219	.173	-.219	4.588	.000
A2	440	4.1864	.245	.245	-.212	5.131	.000
A2	440	3.7409	.269	.176	-.269	5.653	.000
A2	440	3.2682	.117	.113	-.117	2.455	.000
A2	440	3.5727	.216	.216	-.203	4.523	.000
A2	440	4.0591	.224	.224	-.166	4.702	.000
A2	440	4.1591	.240	.240	-.209	5.039	.000
A2	440	3.9818	.241	.212	-.241	5.051	.000
A2	440	3.4705	.217	.139	-.217	4.557	.000
A3	440	3.6705	.218	.166	-.218	4.567	.000
A3	440	3.9818	.216	.212	-.216	4.526	.000
A3	440	3.7841	.263	.263	-.244	5.520	.000
A3	440	3.7841	.182	.182	-.152	3.820	.000
A3	440	4.2182	.250	.250	-.192	5.241	.000
A3	440	3.9091	.234	.201	-.234	4.899	.000
A3	440	3.4455	.295	.223	-.295	6.181	.000
A3	440	3.9114	.245	.224	-.245	5.130	.000
A3	440	3.4773	.202	.139	-.202	4.244	.000
A3	440	3.7750	.230	.181	-.230	4.820	.000
A4	440	4.0136	.217	.217	-.213	4.552	.000
A4	440	3.7386	.291	.291	-.247	6.098	.000
A4	440	3.7818	.182	.182	-.152	3.813	.000
A4	440	4.2182	.250	.250	-.199	5.241	.000
A4	440	3.8955	.236	.199	-.236	4.943	.000
A4	440	3.3977	.295	.224	-.295	6.182	.000
A4	440	3.4091	.302	.244	-.302	6.327	.000

a. Test distribution is Poisson.

Table 13. Proximity Matrix for Barr Conglomerate Mines using SPSS 16.0 (Source: Author)

Case	Matrix File Input															
	A1	**A2**	**A3**	**A4**	**A5**	**A6**	**A7**	**A8**	**A9**	**A10**	**A11**	**A12**	**A13**	**A14**	**A15**	**A16**
A1	.000	1.141E3	835.000	645.000	915.000	961.000	812.000	691.000	457.000	1.041E3	671.000	869.000	649.000	1.478E3	720.000	541.000
A2	1.141E3	.000	312.000	398.000	372.000	704.000	705.000	670.000	394.000	448.000	650.000	584.000	486.000	1.099E3	741.000	620.000
A3	835.000	312.000	.000	278.000	184.000	394.000	237.000	222.000	234.000	616.000	444.000	210.000	262.000	755.000	257.000	302.000
A4	645.000	398.000	278.000	.000	114.000	332.000	319.000	364.000	188.000	286.000	194.000	248.000	104.000	689.000	323.000	188.000
A5	915.000	372.000	184.000	114.000	.000	270.000	257.000	282.000	254.000	436.000	332.000	186.000	242.000	619.000	277.000	246.000
A6	961.000	704.000	394.000	332.000	270.000	.000	323.000	278.000	462.000	930.000	228.000	202.000	426.000	851.000	359.000	254.000
A7	812.000	705.000	237.000	319.000	257.000	323.000	.000	171.000	289.000	803.000	343.000	125.000	277.000	628.000	76.000	257.000
A8	691.000	670.000	222.000	364.000	282.000	278.000	171.000	.000	332.000	962.000	424.000	218.000	384.000	765.000	151.000	246.000
A9	457.000	394.000	234.000	188.000	254.000	462.000	289.000	332.000	.000	454.000	340.000	330.000	208.000	723.000	261.000	258.000
A10	1.041E3	448.000	616.000	286.000	436.000	930.000	803.000	962.000	454.000	.000	584.000	678.000	382.000	929.000	799.000	718.000
A11	671.000	650.000	444.000	194.000	332.000	228.000	343.000	424.000	340.000	584.000	.000	210.000	276.000	791.000	371.000	210.000
A12	869.000	584.000	210.000	248.000	186.000	202.000	125.000	218.000	330.000	678.000	210.000	.000	274.000	649.000	201.000	208.000
A13	649.000	486.000	262.000	104.000	242.000	426.000	277.000	384.000	208.000	382.000	276.000	274.000	.000	795.000	265.000	234.000
A14	1.478E3	1.099E3	755.000	689.000	619.000	851.000	628.000	765.000	723.000	929.000	791.000	649.000	795.000	.000	544.000	721.000
A15	720.000	741.000	257.000	323.000	277.000	359.000	76.000	151.000	261.000	799.000	371.000	201.000	265.000	544.000	.000	277.000
A16	541.000	620.000	302.000	188.000	246.000	254.000	257.000	246.000	258.000	718.000	210.000	208.000	234.000	721.000	277.000	.000
A17	1.020E3	413.000	405.000	259.000	289.000	633.000	682.000	767.000	393.000	375.000	537.000	587.000	329.000	986.000	718.000	387.000
A19	919.000	698.000	276.000	314.000	228.000	276.000	191.000	180.000	402.000	782.000	314.000	144.000	342.000	493.000	179.000	260.000
A20	865.000	660.000	262.000	276.000	182.000	230.000	209.000	234.000	402.000	686.000	310.000	160.000	338.000	549.000	205.000	192.000
A21	1.084E3	491.000	541.000	279.000	269.000	489.000	554.000	581.000	527.000	347.000	439.000	473.000	383.000	616.000	486.000	481.000
A22	712.000	589.000	259.000	265.000	263.000	371.000	166.000	203.000	273.000	609.000	293.000	183.000	261.000	516.000	114.000	251.000
A23	974.000	401.000	245.000	191.000	93.000	307.000	310.000	331.000	345.000	511.000	347.000	293.000	273.000	802.000	362.000	333.000
A24	1.922E3	605.000	933.000	671.000	685.000	1.165E3	1.112E3	1.391E3	945.000	375.000	1.017E3	1.023E3	749.000	1.408E3	1.212E3	1.219E3
A25	810.000	413.000	371.000	249.000	355.000	541.000	622.000	511.000	441.000	569.000	379.000	465.000	285.000	1.060E3	602.000	357.000
A26	856.000	677.000	315.000	441.000	375.000	339.000	302.000	275.000	457.000	849.000	341.000	247.000	453.000	780.000	322.000	275.000
A27	430.000	551.000	323.000	377.000	435.000	675.000	386.000	319.000	173.000	627.000	539.000	479.000	323.000	866.000	310.000	425.000
A28	500.000	439.000	275.000	227.000	289.000	489.000	328.000	367.000	59.000	517.000	381.000	365.000	249.000	790.000	298.000	285.000
A29	1.045E3	502.000	632.000	314.000	456.000	904.000	815.000	962.000	488.000	112.000	602.000	694.000	404.000	995.000	813.000	704.000
A30	753.000	688.000	514.000	254.000	398.000	364.000	469.000	554.000	404.000	616.000	148.000	342.000	324.000	925.000	493.000	308.000
A31	850.000	591.000	265.000	261.000	237.000	299.000	220.000	319.000	343.000	643.000	259.000	103.000	283.000	756.000	290.000	261.000
A32	653.000	520.000	288.000	142.000	278.000	462.000	305.000	410.000	232.000	420.000	316.000	306.000	38.000	857.000	295.000	266.000
A33	1.405E3	1.056E3	738.000	682.000	634.000	864.000	635.000	758.000	684.000	928.000	780.000	668.000	776.000	141.000	565.000	718.000
A34	742.000	743.000	303.000	347.000	315.000	413.000	154.000	229.000	283.000	789.000	407.000	271.000	297.000	624.000	80.000	325.000
A35	558.000	633.000	321.000	221.000	277.000	303.000	290.000	281.000	277.000	731.000	255.000	247.000	261.000	782.000	306.000	45.000
A36	974.000	425.000	405.000	281.000	319.000	651.000	676.000	747.000	383.000	413.000	545.000	591.000	339.000	1.028E3	708.000	393.000
A37	493.000	452.000	292.000	210.000	290.000	492.000	339.000	398.000	60.000	480.000	364.000	378.000	230.000	789.000	313.000	292.000
A38	1.128E3	593.000	717.000	405.000	537.000	981.000	880.000	1.027E3	559.000	217.000	679.000	769.000	487.000	1.054E3	880.000	785.000
A39	689.000	666.000	456.000	228.000	352.000	276.000	369.000	450.000	362.000	610.000	68.000	248.000	302.000	825.000	393.000	246.000
A40	848.000	621.000	293.000	283.000	253.000	301.000	230.000	321.000	367.000	691.000	283.000	127.000	311.000	772.000	298.000	271.000
A42	1.386E3	1.041E3	731.000	659.000	611.000	827.000	634.000	751.000	679.000	909.000	759.000	651.000	759.000	122.000	552.000	693.000
A43	704.000	737.000	285.000	317.000	293.000	383.000	124.000	197.000	267.000	777.000	381.000	241.000	267.000	606.000	52.000	289.000
A44	552.000	627.000	309.000	203.000	253.000	263.000	268.000	257.000	271.000	729.000	231.000	223.000	251.000	752.000	286.000	25.000
A45	1.025E3	462.000	440.000	282.000	316.000	632.000	699.000	772.000	422.000	434.000	542.000	600.000	360.000	1.039E3	731.000	402.000
A46	992.000	417.000	405.000	263.000	295.000	613.000	672.000	745.000	389.000	403.000	523.000	579.000	333.000	1.014E3	708.000	375.000

A33	A32	A31	A30	A29	A28	A27	A26	A25	A24	A23	A22	A21	A20	A19	A18	A17
1.405E3	653.000	850.000	753.000	1.045E3	500.000	430.000	856.000	810.000	1.922E3	974.000	712.000	1.084E3	865.000	919.000	973.000	1.020E3
1.056E3	520.000	591.000	688.000	502.000	439.000	551.000	677.000	413.000	605.000	401.000	589.000	491.000	660.000	698.000	390.000	413.000
738.000	288.000	265.000	514.000	632.000	275.000	323.000	315.000	371.000	933.000	245.000	259.000	541.000	262.000	276.000	162.000	405.000
682.000	142.000	261.000	254.000	314.000	227.000	377.000	441.000	249.000	671.000	191.000	265.000	279.000	276.000	314.000	152.000	259.000
634.000	278.000	237.000	398.000	456.000	289.000	435.000	375.000	355.000	685.000	93.000	263.000	269.000	182.000	228.000	78.000	289.000
864.000	462.000	299.000	364.000	904.000	489.000	675.000	339.000	541.000	1.165E3	307.000	371.000	489.000	230.000	276.000	200.000	633.000
635.000	305.000	220.000	469.000	815.000	328.000	386.000	302.000	622.000	1.112E3	310.000	166.000	554.000	209.000	191.000	235.000	682.000
758.000	410.000	319.000	554.000	962.000	367.000	319.000	275.000	511.000	1.391E3	331.000	203.000	581.000	234.000	180.000	284.000	767.000
684.000	232.000	343.000	404.000	488.000	59.000	173.000	457.000	441.000	945.000	345.000	273.000	527.000	402.000	402.000	272.000	393.000
928.000	420.000	643.000	616.000	112.000	517.000	627.000	849.000	569.000	375.000	511.000	609.000	347.000	686.000	782.000	538.000	375.000
780.000	316.000	259.000	148.000	602.000	381.000	539.000	341.000	379.000	1.017E3	347.000	293.000	439.000	310.000	314.000	270.000	537.000
668.000	306.000	103.000	342.000	694.000	365.000	479.000	247.000	465.000	1.023E3	293.000	183.000	473.000	160.000	144.000	164.000	587.000
776.000	38.000	283.000	324.000	404.000	249.000	323.000	453.000	285.000	749.000	273.000	261.000	383.000	338.000	342.000	220.000	329.000
141.000	857.000	756.000	925.000	995.000	790.000	866.000	780.000	1.060E3	1.408E3	802.000	516.000	616.000	549.000	493.000	725.000	986.000
565.000	295.000	290.000	493.000	813.000	298.000	310.000	322.000	602.000	1.212E3	362.000	114.000	486.000	205.000	179.000	271.000	718.000
718.000	266.000	261.000	308.000	704.000	285.000	425.000	275.000	357.000	1.219E3	333.000	251.000	481.000	192.000	260.000	248.000	387.000
967.000	367.000	558.000	535.000	401.000	432.000	622.000	670.000	446.000	622.000	388.000	670.000	450.000	527.000	615.000	275.000	.000
530.000	384.000	247.000	448.000	806.000	445.000	455.000	265.000	471.000	1.185E3	321.000	209.000	429.000	140.000	.000	198.000	615.000
588.000	374.000	253.000	426.000	696.000	429.000	499.000	255.000	437.000	1.043E3	257.000	175.000	349.000	.000	140.000	200.000	527.000
669.000	429.000	504.000	519.000	409.000	562.000	620.000	556.000	446.000	544.000	320.000	364.000	.000	349.000	429.000	367.000	450.000
541.000	295.000	264.000	421.000	633.000	306.000	344.000	296.000	454.000	1.084E3	304.000	.000	364.000	175.000	209.000	297.000	670.000
793.000	313.000	332.000	417.000	527.000	384.000	514.000	424.000	308.000	698.000	.000	304.000	320.000	257.000	321.000	147.000	388.000
1.393E3	801.000	994.000	1.019E3	463.000	998.000	1.100E3	1.180E3	952.000	.000	698.000	1.084E3	544.000	1.043E3	1.185E3	767.000	622.000
1.023E3	329.000	466.000	425.000	599.000	482.000	526.000	510.000	.000	952.000	308.000	454.000	446.000	437.000	471.000	341.000	446.000
767.000	487.000	330.000	493.000	867.000	502.000	512.000	.000	510.000	1.180E3	424.000	296.000	556.000	255.000	265.000	345.000	670.000
823.000	341.000	496.000	583.000	631.000	198.000	.000	512.000	526.000	1.100E3	514.000	344.000	620.000	499.000	455.000	467.000	622.000
751.000	273.000	354.000	425.000	441.000	.000	198.000	502.000	482.000	998.000	384.000	306.000	562.000	429.000	445.000	309.000	432.000
994.000	442.000	647.000	590.000	.000	441.000	631.000	867.000	599.000	463.000	527.000	633.000	409.000	696.000	806.000	554.000	401.000
894.000	368.000	295.000	.000	590.000	425.000	583.000	493.000	425.000	1.019E3	417.000	421.000	519.000	426.000	448.000	346.000	535.000
717.000	281.000	.000	295.000	647.000	354.000	496.000	330.000	466.000	994.000	332.000	264.000	504.000	253.000	247.000	223.000	558.000
796.000	.000	281.000	368.000	442.000	273.000	341.000	487.000	329.000	801.000	313.000	295.000	429.000	374.000	384.000	256.000	367.000
.000	796.000	717.000	894.000	994.000	751.000	823.000	767.000	1.023E3	1.393E3	793.000	541.000	669.000	588.000	530.000	722.000	967.000
561.000	303.000	274.000	521.000	803.000	320.000	354.000	386.000	614.000	1.200E3	390.000	180.000	510.000	273.000	261.000	311.000	710.000
715.000	231.000	258.000	347.000	717.000	304.000	432.000	308.000	392.000	1.226E3	368.000	284.000	512.000	235.000	307.000	279.000	410.000
939.000	339.000	574.000	547.000	439.000	422.000	590.000	664.000	466.000	690.000	420.000	666.000	498.000	551.000	625.000	299.000	48.000
708.000	252.000	351.000	392.000	506.000	107.000	227.000	499.000	455.000	925.000	377.000	337.000	537.000	430.000	448.000	304.000	399.000
1.019E3	523.000	778.000	751.000	283.000	632.000	738.000	960.000	672.000	588.000	600.000	730.000	488.000	779.000	853.000	621.000	486.000
814.000	342.000	289.000	178.000	624.000	395.000	561.000	387.000	421.000	1.049E3	379.000	323.000	459.000	344.000	358.000	298.000	551.000
709.000	329.000	128.000	363.000	707.000	410.000	524.000	364.000	506.000	1.040E3	350.000	282.000	506.000	271.000	271.000	247.000	588.000
53.000	775.000	702.000	879.000	975.000	746.000	826.000	768.000	990.000	1.388E3	774.000	526.000	626.000	557.000	511.000	701.000	942.000
543.000	287.000	280.000	487.000	791.000	304.000	328.000	366.000	590.000	1.186E3	374.000	160.000	492.000	239.000	225.000	287.000	688.000
721.000	269.000	266.000	329.000	715.000	298.000	434.000	290.000	382.000	1.208E3	342.000	270.000	486.000	209.000	277.000	255.000	396.000
1.002E3	396.000	591.000	548.000	460.000	461.000	655.000	693.000	475.000	689.000	417.000	695.000	489.000	550.000	630.000	300.000	55.000
959.000	357.000	564.000	529.000	429.000	428.000	618.000	658.000	444.000	660.000	388.000	662.000	460.000	525.000	615.000	277.000	22.000

A34	A35	A36	A37	A38	A39	A40	A41	A42	A43	A44	A45	A46
742.000	558.000	974.000	493.000	1.128E3	689.000	848.000	667.000	1.386E3	704.000	552.000	1.025E3	992.000
743.000	633.000	425.000	452.000	593.000	666.000	621.000	506.000	1.041E3	737.000	627.000	462.000	417.000
303.000	321.000	405.000	292.000	717.000	456.000	293.000	294.000	731.000	285.000	309.000	440.000	405.000
347.000	221.000	281.000	210.000	405.000	228.000	283.000	134.000	659.000	317.000	203.000	282.000	263.000
315.000	277.000	319.000	290.000	537.000	352.000	253.000	268.000	611.000	293.000	253.000	316.000	295.000
413.000	303.000	651.000	492.000	981.000	276.000	301.000	438.000	827.000	383.000	263.000	632.000	613.000
154.000	290.000	676.000	339.000	880.000	369.000	230.000	317.000	634.000	124.000	268.000	699.000	672.000
229.000	281.000	747.000	398.000	1.027E3	450.000	321.000	416.000	751.000	197.000	257.000	772.000	745.000
283.000	277.000	383.000	60.000	559.000	362.000	367.000	236.000	679.000	267.000	271.000	422.000	389.000
789.000	731.000	413.000	480.000	217.000	610.000	691.000	418.000	909.000	777.000	729.000	434.000	403.000
407.000	255.000	545.000	364.000	679.000	68.000	283.000	308.000	759.000	381.000	231.000	547.000	523.000
271.000	247.000	591.000	378.000	769.000	248.000	127.000	310.000	651.000	241.000	223.000	600.000	579.000
297.000	261.000	339.000	230.000	487.000	302.000	311.000	42.000	759.000	267.000	251.000	360.000	333.000
624.000	782.000	1.028E3	789.000	1.054E3	825.000	772.000	845.000	122.000	606.000	752.000	1.039E3	1.014E3
80.000	306.000	708.000	313.000	880.000	393.000	298.000	311.000	552.000	52.000	286.000	731.000	708.000
325.000	45.000	393.000	292.000	785.000	246.000	271.000	266.000	693.000	289.000	25.000	402.000	375.000
710.000	410.000	48.000	399.000	486.000	551.000	588.000	347.000	942.000	688.000	396.000	55.000	22.000
261.000	307.000	625.000	448.000	853.000	358.000	271.000	384.000	511.000	225.000	277.000	630.000	615.000
273.000	235.000	551.000	430.000	779.000	344.000	271.000	378.000	557.000	239.000	209.000	550.000	525.000
510.000	512.000	498.000	537.000	488.000	459.000	506.000	407.000	626.000	492.000	486.000	489.000	460.000
180.000	284.000	666.000	337.000	730.000	323.000	282.000	311.000	526.000	160.000	270.000	695.000	662.000
390.000	368.000	420.000	377.000	600.000	379.000	350.000	297.000	774.000	374.000	342.000	417.000	388.000
1.200E3	1.226E3	690.000	925.000	588.000	1.049E3	1.040E3	777.000	1.388E3	1.186E3	1.208E3	689.000	660.000
614.000	392.000	466.000	455.000	672.000	421.000	506.000	321.000	990.000	590.000	382.000	475.000	444.000
386.000	308.000	664.000	499.000	960.000	387.000	364.000	495.000	768.000	366.000	290.000	693.000	658.000
354.000	432.000	590.000	227.000	738.000	561.000	524.000	365.000	826.000	328.000	434.000	655.000	618.000
320.000	304.000	422.000	107.000	632.000	395.000	410.000	277.000	746.000	304.000	298.000	461.000	428.000
803.000	717.000	439.000	506.000	283.000	624.000	707.000	440.000	975.000	791.000	715.000	460.000	429.000
521.000	347.000	547.000	392.000	751.000	178.000	363.000	360.000	879.000	487.000	329.000	548.000	529.000
274.000	258.000	574.000	351.000	778.000	289.000	128.000	301.000	702.000	280.000	266.000	591.000	564.000
303.000	231.000	339.000	252.000	523.000	342.000	329.000	66.000	775.000	287.000	269.000	396.000	357.000
561.000	715.000	939.000	708.000	1.019E3	814.000	709.000	794.000	53.000	543.000	721.000	1.002E3	959.000
.000	298.000	722.000	323.000	886.000	429.000	302.000	307.000	546.000	48.000	324.000	753.000	712.000
298.000	.000	380.000	295.000	804.000	291.000	276.000	283.000	698.000	294.000	48.000	437.000	396.000
722.000	380.000	.000	381.000	514.000	559.000	586.000	371.000	944.000	696.000	402.000	69.000	32.000
323.000	295.000	381.000	.000	503.000	350.000	347.000	274.000	711.000	299.000	305.000	420.000	389.000
886.000	804.000	514.000	503.000	.000	571.000	660.000	531.000	994.000	852.000	806.000	529.000	504.000
429.000	291.000	559.000	350.000	571.000	.000	237.000	334.000	793.000	403.000	267.000	556.000	537.000
302.000	276.000	586.000	347.000	660.000	237.000	.000	321.000	680.000	256.000	266.000	567.000	578.000
546.000	698.000	944.000	711.000	994.000	793.000	680.000	757.000	.000	510.000	686.000	971.000	936.000
48.000	294.000	696.000	299.000	852.000	403.000	256.000	279.000	510.000	.000	284.000	711.000	686.000
324.000	48.000	402.000	305.000	806.000	267.000	266.000	251.000	686.000	284.000	.000	397.000	380.000
753.000	437.000	69.000	420.000	529.000	556.000	567.000	362.000	971.000	711.000	397.000	.000	43.000
712.000	396.000	32.000	389.000	504.000	537.000	578.000	343.000	936.000	686.000	380.000	43.000	.000

Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	17	46	22.000	0	0	4
2	16	44	25.000	0	0	5
3	13	32	38.000	0	0	8
4	17	36	40.000	1	0	9
5	16	35	46.500	2	0	29
6	34	43	48.000	0	0	11
7	33	42	53.000	0	0	21
8	13	41	54.000	3	0	19
9	17	45	55.667	4	0	40
10	9	28	59.000	0	0	14
11	15	34	66.000	0	6	17
12	11	39	68.000	0	0	24
13	5	18	78.000	0	0	18
14	9	37	83.500	10	0	27
15	12	31	103.000	0	0	20

16	10	29	112.000	0	0	31
17	7	15	118.000	0	11	23
18	5	23	120.000	13	0	26
19	4	13	126.667	0	8	29
20	12	40	127.500	15	0	30
21	14	33	131.500	0	7	43
22	19	20	140.000	0	0	28
23	7	22	155.000	17	0	25
24	11	30	163.000	12	0	34
25	7	8	190.200	23	0	28
26	3	5	197.000	0	18	32
27	9	27	199.333	14	0	35
28	7	19	215.000	25	22	30
29	4	16	243.667	19	5	32
30	7	12	246.708	28	20	33
31	10	38	250.000	16	0	39
32	3	4	268.036	26	29	33
33	3	7	286.331	32	30	35
34	6	11	289.333	0	24	36
35	3	9	334.477	33	27	36
36	3	6	357.673	35	34	37
37	3	26	371.533	36	0	42
38	2	25	413.000	0	0	40
39	10	21	414.667	31	0	41
40	2	17	443.500	38	9	41
41	2	10	483.500	40	39	42
42	2	3	552.219	41	37	43
43	2	14	770.154	42	21	44
44	1	2	841.659	0	43	45
45	1	24	975.578	44	0	0

انجمن مهندسی معدن ایران
نشریه مهندسی معدن و محیط زیست
نشانی نشریه: www.jme.shahroodut.ac.ir
دانشگاه صنعتی شاهرود

احیای مناظر معدنی به عنوان دارایی‌های گردشگری میراث زمین‌شناختی: بینش‌های تطبیقی از جارکند و راجستان، هند

آدیتی ناگ*

دپارتمان معماری و طراحی، دانشکده علوم، فناوری و معماری، دانشگاه مانیپال جایپور، جایپور، راجستان، ۳۰۳۰۰۷ - هند

اطلاعات مقاله

تاریخ ارسال: ۲۰۲۵/۰۵/۰۳
تاریخ داوری: ۲۰۲۵/۰۶/۰۹
تاریخ پذیرش: ۲۰۲۵/۰۶/۳۰

DOI: 10.22044/jme.2025.16168.3123

کلمات کلیدی

احیای چشم‌انداز معدن
کاربری زمین پس از معدن
تحلیل ادراک بازدیدکنندگان
توسعه گردشگری پایدار
مشارکت جامعه

چکیده

مکان‌های میراث معدنی هند (MHS) نشان‌دهنده مسیرهای گردشگری توسعه‌نیافته برای حفاظت از فرهنگ و ارتقای جامعه هستند. این مطالعه، مقایسه‌ای دو مکانی را بر اساس رویکردی ترکیبی با ترکیب نظرسنجی‌های ادراکی بازدیدکنندگان، تجزیه و تحلیل تصاویر ماهواره‌ای و تکنیک‌های آماری شامل آزمون‌های t، تحلیل کای اسکوئر و خوشه‌بندی سلسله مراتبی، برای معادن دوری (جارکند) و مجتمع بار (راجستان) انجام می‌دهد. نتایج به وضوح تضادهایی را آشکار می‌کند: در حالی که بار بهبود زیست‌محیطی و ادغام جامعه را تأیید می‌کند، دوری به دلیل محدودیت‌های زیرساختی و تفسیری آسیب می‌بیند. سایر استراتژی‌ها شامل تفسیر میراث مبتنی بر هوش مصنوعی و تقسیم‌بندی بازدیدکنندگان برای بهبود رقابت‌پذیری سایت است. از یافته‌ها چنین برمی‌آید که برنامه‌ریزی چشم‌انداز و گردشگری داده‌محور همراه با مشارکت محلی می‌تواند چشم‌اندازهای پس از استخراج را به طور مؤثر حفظ و ارتقا دهد.

نویسنده مسئول مکاتبات: ar.aditi204@gmail.com (آ. ناگ)