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Research Article:

The Impact of Visual Mitigation Strategies on Visitor Visual Satisfaction in Mountain Resort Design: A Case Study of Pank Resort, Kurdistan Region of Iraq

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Abstract

Mountain resorts rely on the quality of visual views as a key part of the visitor experience; however, development in sensitive mountainous environments may weaken this value when buildings, roads, service elements, and other built interventions become visually dominant. As a result, it remains unclear how implemented visual mitigation strategies contribute to visitors' emotional and visual satisfaction in existing mountain resorts. This paper investigates this relationship using Pank Resort in the Kurdistan Region of Iraq as a case study. A mixed-method case-study approach was adopted, combining checklist-based visual assessment, field observation, spatial documentation, and visitor questionnaire data. First, visual mitigation strategies were assessed using field observations, site plans, contour maps, satellite imagery, and visual documentation to evaluate visibility conditions, vegetation cover, terrain use, skyline exposure, and built-form integration. Second, visitor visual satisfaction was measured through a field questionnaire administered to 70 resort visitors. The questionnaire included nine emotional and perceptual questions rated on a five-point Likert scale, followed by multiple-choice questions identifying the visual factors influencing visitors' evaluations. The results indicate that visual mitigation strategies do not contribute equally to visual satisfaction. Terrain-responsive siting, skyline subordination, layered planting, natural materials, and landscape integration showed stronger relevance to calmness, safety, and visual attractiveness, while some architectural detailing and surface-treatment strategies were less consistently perceived. The study provides practical evidence for visually sensitive mountain resort design in the Kurdistan Region.

1. Introduction

The design of resorts in mountainous regions requires careful balance between tourism development and landscape sensitivity. Mountain environments are shaped by steep terrain, exposed slopes, ridgelines, and long-distance visibility, which make built interventions highly visible within the landscape [12,19]. Therefore, the relationship between buildings, infrastructure, circulation, vegetation, and landform becomes a major concern in mountain resort planning. Visual disturbance may occur when built elements dominate the natural setting through inappropriate site selection, excessive massing, strong material or color contrast, vegetation removal, exposed infrastructure, or skyline interruption [19,25]. These impacts are critical because changes in landform, road alignment, retaining structures, and building placement can be perceived from multiple viewpoints [12]. As a result, mountain resort design requires strategies that reduce visual dominance and improve compatibility between architecture and landscape. Visual mitigation strategies provide a design-based response to this problem. These strategies include terrain-responsive layout, skyline subordination, clustered development, scale adaptation, natural material use, color integration, layered planting, visual buffers, and edge transition

[12,27]. When integrated from the early stages of site selection, layout, massing, circulation, material selection, and landscape design, these strategies can reduce visual impact more effectively than corrective treatments applied after construction [12,19].Visual satisfaction refers to users' affective and perceptual response to the visual environment. Studies in environmental psychology and landscape perception indicate that satisfaction is influenced by coherence, legibility, visual comfort, naturalness, and the ability to understand and experience space [8,9]. In mountain resorts, these qualities are related to emotional responses such as calmness, safety, attractiveness, attachment, and comfort [5,13].Although visual mitigation strategies are widely discussed in landscape planning and visual impact assessment, much of their application remains based on expert judgment or general design assumptions. Limited empirical research has examined how implemented visual mitigation strategies in existing mountain resorts contribute to visitors' emotional and visual satisfaction [4,20]. This gap is especially relevant in the Kurdistan Region of Iraq, where mountain tourism is expanding and mountainous landscapes represent cultural identity, vernacular adaptation, and environmental sensitivity [7,17,21,23].Therefore, this study uses Pank Resort as a case study to evaluate the implementation of visual mitigation strategies and examine their relationship with visitors' emotional and visual satisfaction. The study aims to identify which strategies are more closely associated with visitor satisfaction and hypothesizes that visual mitigation strategies do not contribute equally, with terrain-responsive, landscape-integrated, and material-based strategies expected to show stronger relationships with positive emotional responses.

2. Literature Review

2.1 Visual Mitigation Strategies in Mountain Resorts

Visual mitigation strategies are planning and design measures used to reduce the visual impact of development and improve compatibility between built form and landscape. In mountain resort environments, these strategies are particularly important because steep topography, expansive viewsheds, and skyline exposure increase the visibility of buildings, roads, service areas, and other built interventions [12]. Accordingly, visual mitigation should be considered from the early stages of design, particularly during site selection, building placement, and layout organization [12,19]. In mountain resort design, visual mitigation commonly involves terrain-responsive layout, skyline control, clustered development, scale adaptation, material compatibility, and landscape integration [12]. Contour-following layouts, appropriate building placement, and clustering can reduce the visual dominance of development while maintaining continuity between the resort and the surrounding landform [2,27]. In contrast, dispersed layouts and excessive grading may increase the overall visual dominance of development, even when individual buildings appear visually restrained [25]. Visual mitigation should therefore not be reduced to camouflage alone. Although materials, colors, vegetation, and surface treatments can soften the appearance of built forms, they cannot compensate for poor siting, excessive landform modification, or weak skyline control [20]. For this reason, visual mitigation in mountain resorts should be understood as an integrated design process linking terrain adaptation, spatial organization, architectural form, material treatment, and landscape structure from the earliest stages of planning [12,19].

2.2 Theoretical Foundations of Visual Satisfaction

Visual satisfaction refers to the emotional and psychological response of users to the visual environment [24]. In environmental preference research, this response is commonly explained through the way people process visual information, interpret spatial order, and experience environmental qualities [5]. Kaplan's information-processing theory identifies coherence, complexity, legibility, and mystery as key dimensions of environmental preference, suggesting that visually satisfying environments are those that can be understood, explored, and experienced without excessive cognitive effort [9]. This theoretical basis is relevant to mountain resort landscapes because views, spatial clarity, visual order, and naturalness contribute to the visitor's experience of place. Prospect-refuge theory also explains environmental preference through the balance between open views and a sense of protection, which is particularly relevant in mountainous environments where exposure and panoramic visibility are dominant spatial conditions [5]. Landscape perception studies further indicate that satisfaction is influenced by attention, previous experience, and background, while research on restoration and wellbeing supports the use of emotion-based satisfaction measures in landscape and tourist environments [8,13]. In this study, visual satisfaction is therefore understood not only as an evaluation of scenery, but as an affective and perceptual response shaped by calmness, safety, attractiveness, comfort, attachment, and the ability of visitors to visually understand and experience the resort environment.

2.3 Visual Satisfaction

Because landscape scenery and visual satisfaction include subjective components, structured methods have been developed to measure visual preference more systematically [2]. Scenic Beauty Estimation was one of the early methods demonstrating that

shared visual preference can be quantified through user ratings and transformed into comparable values [4]. This supports the use of perception-based assessment in studies where visual quality is evaluated not only through expert judgment but also through the responses of users who experience the landscape directly. More recent visual assessment approaches combine perceptual evaluation with spatial and visualization tools, including viewshed analysis, scenario visualization, GIS-based analysis, field observation, and photographic documentation [10]. These approaches are relevant to mountain resort environments because visual satisfaction depends on both physical visibility conditions and the visitor's perceptual response to the landscape. Therefore, integrating technical assessment with cultural values and public or visitor participation is important for a more complete evaluation of visual impact and visual satisfaction [20,12].figure 3. Within this framework, the present study combines checklist-based visual assessment with visitor questionnaire data to compare the physical implementation of visual mitigation strategies with visitor-based emotional and visual satisfaction.

2.4 The Kurdish Mountain Context

The mountainous landscapes of the Kurdistan Region are not only environmental settings but also cultural landscapes shaped by settlement patterns, slope adaptation, local materials, and climatic response. Literature on Kurdish mountain settlements and houses indicates that traditional forms were historically adapted to slope, aspect, and available materials in ways that supported visual compatibility with the surrounding landscape [7,23,17]. This is relevant to mountain resort design because contemporary development in such settings should respond to landscape sensitivity rather than appear visually detached from its context. Studies on Kurdish vernacular architecture also show that local building traditions include principles of environmental performance, material efficiency, passive cooling, and adaptation to climate [1,21,11,22]. Although most of these studies focus on residential architecture rather than resort design, they provide useful contextual principles for understanding visual compatibility, natural material use, and the relationship between built form and mountainous terrain. In addition, literature on environmental and land-use conditions in the Kurdistan mountain landscape reinforces the need to treat resort development as both a planning and architectural issue. In visually sensitive mountain areas, resort development should therefore be assessed through its relationship to landform, vegetation, visibility, landscape sensitivity, and cultural context [16].

2.5 Synthesis and Research Gap

The reviewed literature indicates that visual quality in sensitive landscapes has been examined through two main directions. The first direction focuses on expert-based and technical assessment, including visual impact assessment, scenic quality evaluation, viewshed analysis, photographic documentation, and spatial interpretation [4,10,12,20]. These approaches are useful for identifying visibility, contrast, landform exposure, and the visual dominance of development. However, they often emphasize the physical or expert-evaluated characteristics of the landscape rather than the emotional response of users. The second direction focuses on environmental preference and visual satisfaction, explaining how people respond to visual environments through coherence, legibility, naturalness, prospect, refuge, restoration, and psychological comfort [5,8,9,13,24]. These studies are important because they show that visual quality is not only a physical condition but also a perceptual and emotional experience. However, this body of literature does not always identify which specific design strategies are responsible for producing these emotional responses in built resort environments. Accordingly, a gap remains between the physical assessment of visual mitigation strategies and the visitor-based measurement of visual satisfaction. Previous research and design guidelines explain how visual impacts may be reduced, while environmental preference studies explain why people may prefer certain landscapes; however, fewer studies methodologically connect implemented mitigation strategies with visitors' emotional and visual satisfaction in existing mountain resort settings. This gap limits the ability of designers and planners to determine which visual mitigation strategies are most meaningful from the user's perspective. To address this gap, the present study adopts an integrated methodological approach that combines checklist-based assessment of implemented visual mitigation strategies with visitor questionnaire data measuring emotional and visual satisfaction. This approach makes it possible to compare the physical implementation of design strategies with visitors' perceptual responses, thereby moving beyond expert-only evaluation and providing a more evidence-based understanding of visual mitigation in mountain resort design..

3. Research Problem, Aim, and Hypothesis

Mountain resort development in the Kurdistan Region has increased the need for design approaches that reduce visual impact and improve compatibility between built form and mountainous landscapes. Although visual mitigation strategies are widely discussed in landscape planning and visual impact assessment, their effectiveness in existing resort

environments is often evaluated through expert judgment or general design assumptions rather than through visitor-based evidence. As a result, it remains unclear how implemented visual mitigation strategies are related to visitors' emotional and visual satisfaction in mountain resort settings. The research problem of this study is therefore the limited empirical understanding of the relationship between physically implemented visual mitigation strategies and visitors' perceived visual satisfaction in existing mountain resorts. This problem is significant because visual mitigation strategies may be technically present in a resort, but they may not contribute equally to the emotional responses and visual satisfaction experienced by visitors. Accordingly, this study aims to evaluate the implementation of visual mitigation strategies in Pank Resort and examine their relationship with visitors' emotional and visual satisfaction. More specifically, the study seeks to identify which visual mitigation strategies are more closely associated with positive visitor responses, such as calmness, safety, visual attractiveness, comfort, and attachment. Based on this aim, the study tests the following hypothesis:

H1: Main hypothesis : Implemented visual mitigation strategies are associated with visitors' emotional and perceptual indicators of visual satisfaction in Pank Resort..

A secondary hypothesis is also proposed:

H2: Secondary hypothesis : Materials, roof forms consistent with mountain form, and layered planting are positively associated with visitors' sense of calmness.

H3: Secondary hypothesis : Spatial design features, including soft elevation transitions, path clarity, spatial legibility, visual orientation, and transparency, are associated with visitors' sense of safety.

4. Research methodology

This study adopted a mixed-method case-study approach to examine the relationship between implemented visual mitigation strategies and visitors' emotional and perceptual indicators of visual satisfaction in a mountain resort environment. This approach was appropriate because the research required both a structured assessment of physical design conditions and a visitor-based evaluation of the visual environment. The quantitative data included checklist scores and five-point Likert-scale questionnaire responses, while the qualitative and visual-spatial data included field observation, photographic documentation, site-plan review, contour-map interpretation, satellite imagery, Google Earth interpretation, and coded visitor explanations. The research was conducted in two main phases. The first phase involved a checklist-based visual assessment of the implemented visual mitigation strategies. The checklist was developed from the literature review and the evaluation criteria presented in Table 1. Each checklist item was operationalized into observable visual indicators derived from previous studies on landscape visual assessment, visual mitigation, environmental preference, and mountain resort design. It was completed by the author through direct field observation, basic on-site measurement, systematic photographic recording, site-plan review, contour-map interpretation, satellite imagery, and Google Earth analysis. These sources were used to assess visible design conditions, including terrain adaptation, skyline exposure, building placement, vegetation cover, visual buffers, edge conditions, clustering, and the relationship between built form and landscape. Each visual mitigation sub-strategy was scored on a five-point scale, where 1 indicated very weak implementation and 5 indicated very strong implementation. The score was assigned according to the degree to which each strategy was visibly implemented from the main visitor viewpoints. Because the checklist was completed by a single evaluator, inter-rater reliability could not be tested. To reduce subjectivity, the assessment was based on predefined criteria, multiple visual data sources, and photographic and spatial evidence. The second phase involved a visitor-based questionnaire administered to a total of 70 visitors. The sample size was determined using Cochran's formula with finite population correction, based on an estimated visitor population of approximately 250 during the fieldwork period. The calculation used a 95% confidence level, an assumed maximum population variability of $p = 0.5$, and a margin of error of $e = 0.10$. Under these parameters, the required sample size was approximately 70 respondents. Since the study used a 10% margin of .Data were collected using both Google Forms and paper questionnaires on site, depending on visitor accessibility and response preference. A convenience sampling method was used because participants were selected from available visitors during the fieldwork period. The questionnaire consisted of two parts. The first part measured nine emotional and perceptual indicators of visual satisfaction using a five-point Likert scale: Feeling Calmness, Visual Attractiveness, Sense of Freedom, Feeling of Safety, Inspiration, Sense of Attachment, Memorability, Delight, and Curiosity. The second part asked participants to select the visual factors or mitigation strategies that influenced their evaluations. These selected responses were coded as categorical data and used to link visitor perception with specific visual mitigation strategies. Data were analyzed using descriptive and inferential statistics. Descriptive statistics, including mean values, standard deviation, coefficient of variation, and relative importance, were used to summarize checklist scores and visitor responses. where 5

represents the maximum value on the Likert scale. Inferential tests were used to examine whether selected visual factors or mitigation strategies were significantly associated with specific emotional indicators. Where Likert-scale ratings were compared between participants who selected a given visual factor and those who did not, the Mann–Whitney U test was used. Chi-square goodness-of-fit was used to analyze material preference distribution. This procedure allowed the study to compare the physical implementation of visual mitigation strategies with visitor-based perception without relying on a single composite Visual Satisfaction Index.

Selection of case study

Pank Resort, also known as Shinglebana Resort, is located in the Rawanduz district of the Kurdistan Region of Iraq. It was selected as the case study because it represents a mountainous resort setting with steep slopes, high skyline exposure, and wide viewsheds. These characteristics make visual impacts more observable and make the resort suitable for assessing the implementation of visual mitigation strategies. The selection was based on several criteria. First, the resort is located in a genuine mountainous environment where topography strongly influences visibility, building placement, circulation, and landscape perception. Second, the resort contains visible built interventions, including cabins, roads, service areas, and landscape elements, which allow the relationship between development and natural landform to be examined. Third, it includes discernible visual mitigation strategies, such as terrain adaptation, vegetation use, building clustering, material treatment, and visual orientation, which can be assessed through field observation and visual documentation. Within the resort, the cabin area was selected as the main assessment zone because it contains visually exposed built features and clear relationships between buildings, circulation, vegetation, and surrounding landform. This area also represents a primary visitor experience zone, making it suitable for comparing checklist-based visual assessment with visitor-based emotional and perceptual responses. Therefore, Pank Resort was considered an appropriate case for examining how visual mitigation strategies are implemented and perceived in mountain resort design in the Kurdistan Region.

Measuring visual satisfaction

Visual satisfaction has been defined as an affective and perceptual response to a visual environment, which represents how people emotionally respond to a visual environment [8]. In research on landscape and environmental psychology, visual satisfaction has been associated with theories of environmental preference, which explain why some environments are rated as more preferred than others [4]. Kaplan and Kaplan's information-processing theory of environmental preference and visual satisfaction suggests that visual satisfaction and preference are generated by four important dimensions: coherence, complexity, legibility, and mystery, which determine how easily an environment can be understood and explored [9]. Environments with a good balance of these dimensions are likely to generate high levels of visual satisfaction [20]. Prospect-refuge theory of visual satisfaction and environmental preference suggests that visual satisfaction can be explained by spatial comfort, which refers to the tendency of people to prefer environments with open views and refuge, which is particularly important in a mountainous environment where there are expansive views and exposed terrain [28]. In light of this, due to the subjective nature of visual satisfaction, various structured means of measuring this have been developed. One of the earliest means of demonstrating this was Scenic Beauty Estimation (SBE), which proved that shared visual satisfaction could be quantitatively measured through user ratings [4]. Today, various means of using Likert scales to directly measure emotional and perceptual responses through questionnaires are more commonly used, allowing satisfaction to be quantitatively measured while maintaining a grounded approach in reality. These perception-based means of analysis are more commonly used today in tourism and landscape studies due to their grounded approach in reality, rather than expert opinion alone [12]

Evaluation criteria and graphical analysis

Evaluating tangible criteria of visual satisfaction

In order to systematically and realistically measure various visual mitigation strategies within mountain resort environments, a structured system was developed to relate grouped mitigation strategies to their visual manifestation within the environment Table (1) represent the evaluation criteria's and the variables of mitigation strategies and their relation to visual satisfaction This system involves translating various mitigation strategies from a generalized planning and design intention into a set of variables that can be systematically evaluated from a primary point of view, based on what is visually perceived by users. This is based on environmental preference theory and visual impact assessment, which states that visual satisfaction is a product of coherence, harmony, legibility, comfort, and naturalness within the visual environment [8,12].

- **Terrain and siting adaptation** strategies involved the assessment of how development adapts to terrain and horizon exposure. Contour adaptive layout, skyline subordination, and strategic siting were included as variables in measuring the degree of fit-to-land and dominance [14]. Siting buildings along natural contours in a manner that remains

subordinate to skyline elements reduces visual contrast and disturbance, contributing to calmness and harmony in a landscape. Legibility of spaces was also included in this section as it contributes to a better sense of visual clarity, which in turn enhances coherence [9].

- **Spatial and circulation** form adaptation **strategies** involved the assessment of the organization of built elements in a landscape [14]. Clustering of developments was included as a variable in measuring the degree of visual sprawl and open landscape areas. Mass/space ratio was included as a measure of openness in a landscape [3]. Curvilinear circulation along natural terrain was included as a measure of natural flow in a landscape, which enhances continuity as it appears more natural and not imposed on the landscape [5].
- **Architectural massing and proportion** adaptation strategies involved the assessment of how building massing, scale, volume, and composition influence visual comfort. Low visual massing and scale adaptation were included as a measure of development in visually sensitive mountain landscapes [3]. Environmental aesthetics research indicates that large-scale buildings cause more perceptual load and visual stress in a landscape. Human-scale proportions contribute to calmness in a landscape [15,24]. Contextual suitability in terms of compatibility in form, line, color, and texture was included as a measure of harmony with the surrounding landscape. Transparency balance and rhythm were included as measures of visual unity in a landscape [15,24].
- **Roof and skyline** design strategies focus on the relationship between the roof forms and the mountain skyline [18]. The roof slopes that match the curvature of the land were measured to assess the integration and reduced contrast of the skyline, enhancing its legibility and continuity with the built form and the terrain, as seen in reference [12].
- **Materiality and surface treatment** strategies involved material use in terms of perceived authenticity and attachment, reflectivity control in terms of minimizing glare and visual nuisance, and color integration and texture in terms of minimizing contrast and visual harshness. This indicates support for visual quality [4, 15].
- **Landscape integration strategies** involved layered planting, native vegetation, seasonal visual interest, visual buffering, edge transition, and visual liability. Landscape research has shown that vegetation structure, ecological continuity, and buffering contribute to perceived refuge, restoration, and attachment while minimizing exposure and visual stress. This further supports the importance of visual quality [8, 27, 28].

5. Results and Discussions

a. Evaluation and Graphical Analysis

The checklist-based evaluation was used to assess the visible implementation of visual mitigation strategies in Pank Resort, as presented in Table 2. The results indicate that large-scale planning and landscape-related strategies performed more strongly than several architectural articulation and surface-treatment strategies. Terrain and siting adaptation recorded the strongest performance, with contour adaptive layout, skyline subordination, and strategic placement scoring between **4.26 and 5.00**. These results indicate that the resort's general siting and relationship to the mountainous terrain contribute positively to reducing visual dominance and improving visual coherence. Spatial and circulation form strategies also showed relatively strong performance. Clustered development recorded a score of **4.50**, while curvilinear circulation recorded **5.00**, suggesting that the spatial organization of the resort contributes to the visual continuity of the site. These strategies help reduce the perception of visual sprawl and support a more natural relationship between circulation patterns and the mountain landform. Landscape integration strategies also performed strongly, particularly **layered planting** with a score of **5.00** and **native vegetation** with a score of **4.40**. These results suggest that vegetation contributes significantly to softening the relationship between built form and natural setting. However, lower scores for **edge transition** and **visual liability control**, both scoring **3.00**, indicate that some visually exposed edges and service-related elements still require stronger treatment. The results for architectural massing and proportion were more varied. Low visual massing and scale adaptation both scored **5.00**, indicating that building size and mass were generally compatible with the resort environment. However, contextual suitability scored **3.25**, while transparency balance and rhythm each scored **3.00**, showing weaker performance in architectural articulation and visual unity. Materiality and surface treatment strategies were also moderate: reflectivity control scored **4.00**, while color integration and texture scored **3.25** and **3.40**, respectively. Overall, the checklist results show that terrain-responsive planning and landscape integration form the strongest visual mitigation basis, while edge treatment, architectural rhythm, transparency balance, and some surface treatments need further improvement.

b. Questionnaire

Visitor responses were measured through nine emotional and perceptual indicators of visual satisfaction, as presented in Table 3 and Figer 9. The strongest responses were **Feeling Calmness** ($M = 4.73, RI = 94.58\%$), **Feeling of Safety** ($M = 4.61, RI = 92.17\%$), and **Visual Attractiveness**

($M = 4.50, RI = 90.00\%$). These results indicate that the resort was generally perceived as calm, safe, and visually attractive. In contrast, indicators such as **Curiosity**, **Inspiration**, and **Sense of Attachment** recorded lower values and higher variability. This suggests that the resort is more successful in creating visual harmony, comfort, and emotional stability than in generating novelty, symbolic meaning, or deeper personal engagement. Therefore, visual satisfaction in this study should be understood as a multi-dimensional response, where some emotional indicators are stronger than others. Table 4 and Figer5 show the strategies associated with **Feeling Calmness**. The strongest significant result was linked to **natural materials**, which recorded the highest mean score ($M = 4.88, SD = 0.34$)and a significant p-value ($p = .011$). The low coefficient of variation ($CV = 0.07$)indicates strong agreement among participants. This suggests that natural materials were directly perceived by visitors and contributed strongly to emotional comfort. **Roof slope consistent with mountain form** was also significant ($p = .012$), followed by **layered planting** ($p = .031$). These results indicate that form compatibility with the mountain profile and vegetation depth both contribute to the calming quality of the resort. Although layered planting scored highly in the checklist, natural materials were only moderately represented in some checklist dimensions, yet they showed a strong emotional effect in the visitor survey. This difference is important because it shows that visitors may respond more strongly to elements experienced at eye level and human scale than to broader spatial strategies. The strong association between natural materials, layered planting, and calmness can be interpreted through environmental restoration and stress-reduction perspectives. Natural elements and vegetation are often linked to psychological comfort, restoration, and reduced stress, while views of natural settings can support positive emotional response [8,28]. In the Kurdish mountain context, natural materials such as wood and stone may also carry cultural and vernacular associations, making the built environment appear more familiar, contextual, and less visually imposed [7,17,21]. An important contrast appears in the case of **terrain adaptive layout**. Although it was selected by many participants (57.1%), it was not statistically significant for calmness ($p = .545$). Similarly, scale adaptation, native plant use, and spatial legibility recorded positive descriptive values but did not show statistical significance. This does not mean these strategies are unimportant. Rather, it suggests that some high-scoring checklist items may support the overall visual structure of the resort without being directly associated with one specific emotional response. This finding demonstrates the limitation of relying only on expert or checklist-based evaluation: physical implementation can be strong, but visitor perception determines how that implementation is emotionally experienced. Because natural materials were significantly associated with calmness, material preference was examined further in Table 5 and Figer 6. The results show that **wood** was the most preferred material, selected by **38 participants**, exceeding the expected frequency. The chi-square goodness-of-fit test confirmed that the distribution of material preference was statistically significant ($\chi^2 = 36.47, p < .001$). Other materials, including stone, roof tiles, and mud, were selected less frequently. This result supports the importance of natural material use in mountain resort design. Wood may be perceived as visually warmer, softer, and more compatible with the surrounding landscape. In addition, natural materials can strengthen contextual identity when they reflect local or vernacular associations. Therefore, material choice should not be treated only as a surface treatment, but as a visual mitigation strategy that influences emotional response and perceived landscape compatibility. Table 6 presents the spatial strategies associated with **Feeling of Safety**. **Soft elevation transitions** recorded the highest relevance (65.7%), with a high mean score ($M = 4.76$)and low coefficient of variation ($CV = 0.091$). This indicates that smooth level changes are important for safety perception in sloped resort environments because they reduce uncertainty and physical discomfort. **Path clarity and connectivity** also ranked highly ($M = 4.69; 55.7\%$), showing that clear circulation supports orientation and confidence. **Spatial legibility and wayfinding** recorded a high mean score ($M = 4.74$), although its relevance percentage was lower (44.3%). Other strategies, including scale adaptation, visual orientation to open views, and transparency, also received positive mean scores but lower relevance percentages. Since the p-values for these strategies were above 0.05, the findings should be interpreted mainly as descriptive evidence of perceived importance rather than strong inferential confirmation. Table 7 and Figer7 present the visual cues associated with safety perception. **Greenery and vegetation** ranked first, selected by **86%** of respondents as a factor enhancing safety. Although its p-value ($p = 0.115$)was not statistically significant, the high selection percentage indicates that vegetation was strongly perceived as a safety-supporting visual cue. **Building color** was selected by **33%** of respondents and showed a significant relationship ($p = 0.011$), suggesting that color integration may support safety perception through visual softness and coherence. **Roof form/style** was selected by **24%** of respondents and was also significant ($p = 0.009$), indicating that roof form can function as a recognizable and reassuring

visual element. In contrast, building scale and the mountain/natural setting did not show significant relationships with safety perception. These results suggest that immediate visual cues, such as vegetation, color, and roof form, may be more strongly perceived by visitors than broader contextual features when evaluating safety. The combined findings show that visual mitigation strategies influence visitors' emotional and perceptual indicators of visual satisfaction in different ways. The checklist results indicate that topography adaptation, skyline control, clustered development, curvilinear circulation, and landscape integration provide the strongest physical basis for visual quality. These large-scale strategies are foundational because they establish the relationship between the resort and the mountain landscape before visitors respond to individual architectural or landscape details [12,19,27]. However, the visitor survey shows that the most emotionally effective strategies are not always the same as the highest checklist-scoring strategies. Natural materials and layered planting were strongly linked to calmness, while vegetation, building color, and roof form influenced safety perception. This indicates that visitors respond strongly to elements experienced directly at human scale. Materials, planting, color, roof form, and path conditions are more immediately perceived emotionally than broader spatial decisions, even when those broader decisions remain essential for overall visual coherence. This difference between checklist performance and visitor response is one of the main findings of the study. It demonstrates that expert-based assessment is useful for identifying the physical implementation of mitigation strategies, but it cannot fully explain how these strategies are emotionally experienced by visitors. Therefore, visual mitigation assessment in mountain resorts should combine both physical evaluation and visitor-based perception. The low scores for curiosity and inspiration suggest that the resort's success in creating calmness and visual harmony may also limit visual stimulation and novelty. A visually calm environment may become less memorable or inspiring if it lacks symbolic elements, spatial discovery, focal points, or carefully controlled contrast. Future resort design should therefore balance harmony with visual interest by introducing context-sensitive landmarks, varied spatial sequences, framed views, and culturally meaningful design details. For designers and planners in the Kurdistan Region, the findings suggest that terrain response, skyline control, clustered development, natural materials, and layered vegetation should be prioritized from the earliest stages of planning and design. At the same time, more attention should be given to weaker areas such as edge transition, visual liability control, architectural rhythm, transparency balance, and contextual detailing. These improvements can strengthen both the physical performance of visual mitigation and the emotional quality of visitor experience in mountain resort environments

6. Conclusion

This study examined the relationship between implemented visual mitigation strategies and visitors' emotional and perceptual indicators of visual satisfaction in a mountain resort environment. Based on the checklist assessment and visitor questionnaire results, the main conclusions are as follows:

- **Visual mitigation strategies do not contribute equally to visual satisfaction**
  The findings show that some strategies have a stronger relationship with visitors' emotional and perceptual responses than others. Therefore, visual mitigation should be understood as an integrated experiential process rather than a purely technical or aesthetic treatment.
- **Terrain and siting adaptation form the strongest physical basis for visual mitigation**
  The checklist results showed strong performance for terrain-responsive layout, skyline **subordination**, clustered development, curvilinear circulation, and landscape integration. These strategies are foundational because they organize the relationship between built form and mountain landform and reduce visual dominance at the site scale.
- **Visitor satisfaction was strongest in calmness, safety, and visual attractiveness**
  The emotional and perceptual indicators showed that visitors mainly experienced the resort as **calm**, safe, and visually attractive. However, lower scores for curiosity, inspiration, and attachment indicate that the resort is less successful in creating novelty, symbolic engagement, and deeper personal connection.
- **Natural materials, roof form, and layered planting were strongly linked to calmness**
  The **visitor** survey showed significant associations between calmness and natural materials, roof slope consistent with mountain form, and layered planting. This indicates that human-scale elements, especially materials and vegetation, have a strong emotional effect on visitors.
- **Material preference confirms the importance of natural materials**
  Wood **was** the most preferred material, and the chi-square result showed a significant difference in material preference. This supports the role of natural materials in improving visual compatibility and emotional comfort in mountain resort design.
- **Safety perception was influenced by both spatial organization and visual cues**
  Soft elevation transitions, path clarity, spatial legibility, greenery, building color, and roof form

contributed to visitors' sense of safety. This shows that safety is not only a functional issue but also a visual and perceptual quality.

- **Checklist assessment and visitor perception do not always give the same emphasis**
  Some strategies with high checklist scores were not statistically **significant** in visitor responses, while some moderate or human-scale elements were strongly perceived by visitors. This demonstrates that expert or checklist-based assessment alone is not sufficient; visitor perception is necessary to understand how visual mitigation is emotionally experienced.
- **Design priorities for mountain resorts should combine large-scale and human-scale strategies**
  For mountain resort design in the Kurdistan Region, the study **recommends** prioritizing terrain response, skyline control, clustered development, natural materials, layered vegetation, soft elevation transitions, path clarity, and roof-form compatibility. At the same time, weaker areas such as edge transition, visual liability control, architectural rhythm, transparency balance, and contextual detailing require further improvement.
- **Future design should balance harmony with visual stimulation**
  The low scores for curiosity and inspiration suggest that a calm and visually harmonious environment may still lack visual discovery or memorable spatial experience. Future resort design should introduce controlled novelty through framed views, context-sensitive landmarks, varied spatial sequences, and culturally meaningful architectural details.
- **The study has limitations that should guide future research**
  The research was limited to one case study and a convenience sample of 70 visitors during one fieldwork period. In addition, the checklist assessment was completed by a single evaluator. Future studies should compare multiple mountain resorts, include seasonal variation, use more than one evaluator for checklist scoring, and test whether similar visual mitigation priorities appear in other cultural and environmental contexts.

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أثر استراتيجيات التخفيف البصري في تحقيق الرضا البصري للزوار في تصميم المنتجعات الجبلية: منتجع بانك في إقليم كوردستان العراق دراسة حالة

المستخلص:

تعتمد المنتجعات الجبلية على جودة المشاهد البصرية بوصفها جزءاً أساسيًا من تجربة الزائر؛ غير أن التنمية في البيئات الجبلية الحساسة قد تُضعف هذه القيمة عندما تصبح المباني والطرق وعناصر الخدمات والتدخلات العمرانية الأخرى عناصر مهيمنة بصريًا على المشهد الطبيعي. ونتيجة لذلك، لا يزال من غير الواضح كيف تسهم استراتيجيات التخفيف البصري المطبقة في تعزيز الرضا العاطفي والبصري للزوار في المنتجعات الجبلية القائمة. لذلك، تبحث هذه الدراسة في هذه العلاقة من خلال اتخاذ منتجع بانك في إقليم كوردستان العراق دراسة حالة .اعتمدت الدراسة منهجًا مختلطًا قائمًا على دراسة الحالة، يجمع بين التقييم البصري المعتمد على قائمة فحص، والملاحظة الميدانية، والتوثيق المكاني، وبيانات استبيان الزوار. أولًا، تم تقييم تطبيق استراتيجيات التخفيف البصري اعتمادًا على الملاحظات الميدانية، ومخططات الموقع، وخرائط الكنتور، والصور الفضائية، والتوثيق البصري، وذلك لفحص ظروف الرؤية، والغطاء النباتي، واستخدام التضاريس، والتعرض لخط الأفق، وتكامل الكتل المبنية مع المشهد الطبيعي. ثانيًا، تم قياس الرضا البصري للزوار من خلال استبيان ميداني شمل ٧٠ زائرًا، وتضمن تسعة مؤشرات عاطفية وإدراكية مقاسة بمقياس ليكرت الخماسي، تلتها أسئلة اختيار متعدد لتحديد العوامل البصرية المؤثرة في تقييمات الزوار .أظهرت النتائج أن استراتيجيات التخفيف البصري لا تسهم بدرجة متساوية في تحقيق الرضا البصري. فقد أظهرت استراتيجيات الاستجابة للتضاريس، والخضوع لخط الأفق، والزراعة متعددة الطبقات، واستخدام المواد الطبيعية، وتكامل المشهد الطبيعي ارتباطًا أوضح بمؤشرات الهدوء، والأمان، والجاذبية البصرية. في المقابل، كانت بعض استراتيجيات التفصيل المعماري ومعالجات الأسطح أقل وضوحًا في إدراك الزوار. وتوفر الدراسة دليلًا عمليًا لدعم تصميم المنتجعات الجبلية الحساسة بصريًا في إقليم كوردستان.

الكلمات المفتاحية

:تصميم المنتجعات الجبلية؛ استراتيجيات التخفيف البصري؛
الرضا البصري؛ إدراك الزوار؛ تكامل المشهد الطبيعي

Table1: Variables of visual mitigation strategy and it is relation to visual satisfaction (Researcher)

Group Strategy	X Variable (Sub-Strategy)	Related Visual Satisfaction Dimension(s)	How it effect visual satisfaction
Terrain & Siting Adaptation	Contour Adaptive Layout	Coherence & harmony (fit-to-land); reduced visual disturbance	If buildings are shaped according to the landform, views are seen as natural, non-disruptive, and peaceful. Subordination to the ridgeline reduces dominance, which increases safety, clarity, and understandability.
	Skyline Subordination	Visual harmony; reduced dominance/contrast	
	Strategic Placement	Coherence & order; perceived openness	
	Spatial Legibility & Wayfinding	Legibility & coherence (readability/wayfinding)	
Spatial & Circulation Form	Clustered Development	Coherence (organized pattern); reduced sprawl disturbance	A clustered pattern increases understandability of order. Curvilinearity of roadways creates a gradual unfolding of views, creating mystery. Landmarks increase imageability.
	Mass & Space Ratio	Openness / spaciousness; scenic comfort	
	Curvilinear Circulation	Coherence (flow); naturalness of movement lines	
Architectural Massing & Proportion	Low Visual Massing	Harmony (reduced apparent bulk); scenic comfort	small, stepped, proportioned forms reduce visual stress, creating a balanced, harmonious, and aesthetically pleasing scene.
	Scale Adaptation	Comfort & human-scale coherence	
	Contextual Suitability	Harmony (context fit: line/form/color/texture)	
	Transparency Balance	Visual comfort; cultural/modern preference balance	
	Rhythm	Coherence/order; visual unity	
Roof & Skyline Design	Roof Slope Consistent with Mountain Form	Harmony (roof–landform fit); reduced skyline contrast	Land curvature alignment of roofs → harmony, while traditional forms create memorability of culture, and clear skylines create legibility
Materiality & Surface Treatment	Natural Materials	Naturalness & attachment; perceived authenticity	Natural colors and textures reduce harshness→ creating blending, leading to→ calmness, peace, and restoration, while reducing glare →comfort
	Reflectivity / Glare Control	Visual comfort; reduced nuisance/visual liability	
	Color Integration	Harmony (low color contrast); calmness/comfort	
	Texture	Coherence & material richness; reduced flatness	
Landscape Integration	Layered Planting	Inspiration & scenic richness; comfort	Layers of vegetation create → complexity+ mystery native vegetation → restoration, and buffers → refuge, leading to calmness.
	Native Plant Use	Naturalness/place identity; attachment	
	Seasonal Visual Interest	Memorability & inspiration (year-round interest)	
	Visual Buffers & Screening	Comfort & safety; reduced exposure/visual intrusion	
	Edge Transition	Harmony & coherence (soft boundary transition)	
	Visual Liability Control	Reduced disturbance (clutter control); overall visual quality	

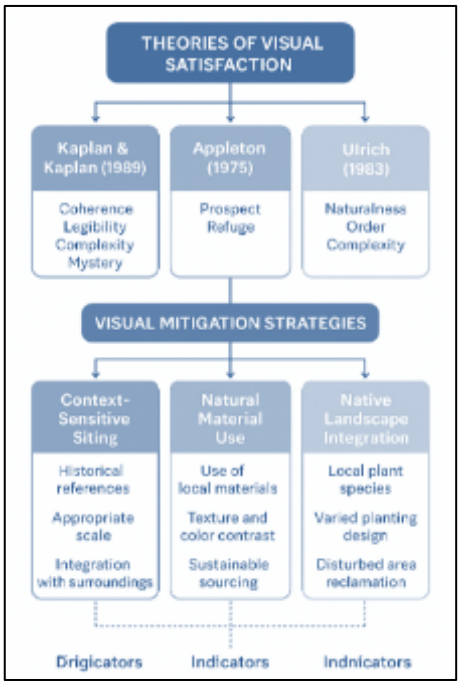


Fig.1: Main Theories to Measure Visual Satisfaction (Researcher)

Fig.2: Location of Pank Resort (Researcher)

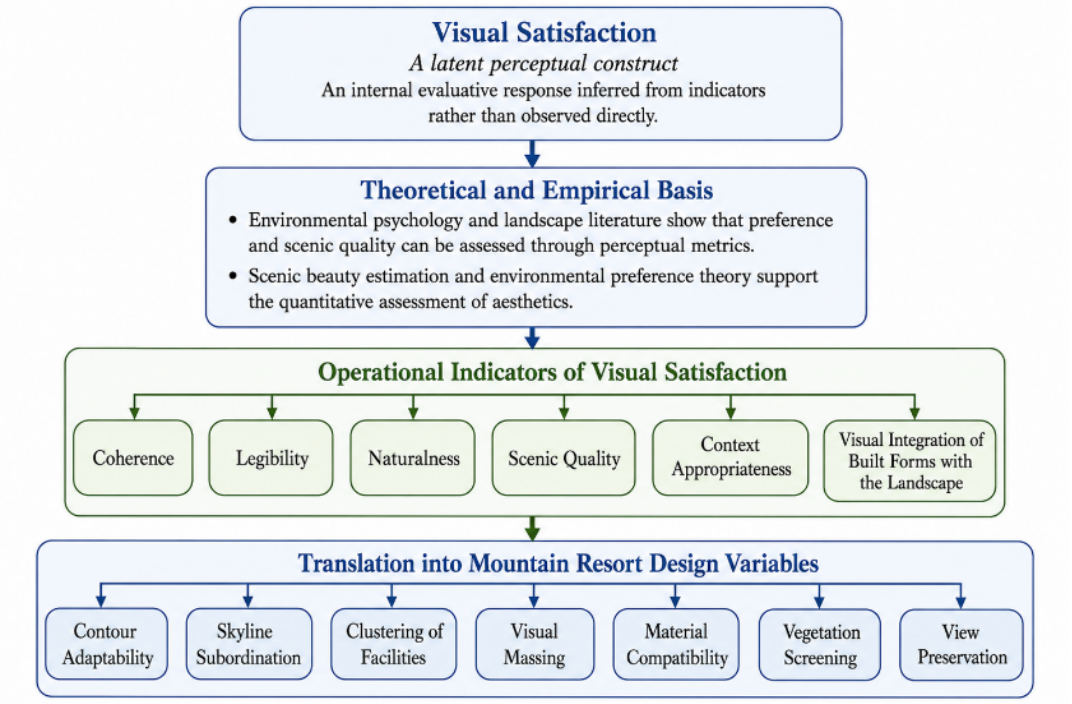
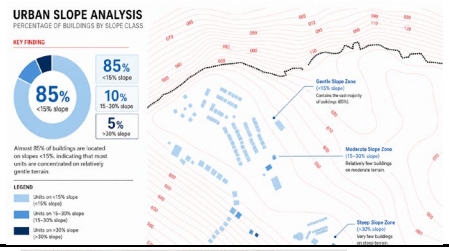
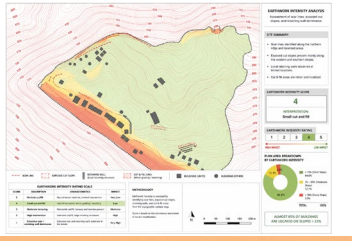
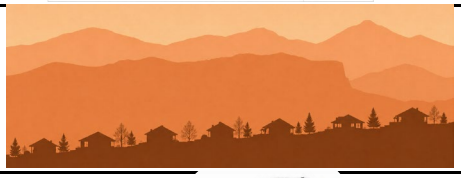
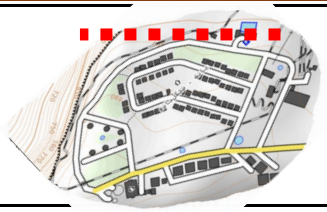
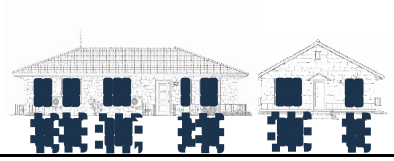
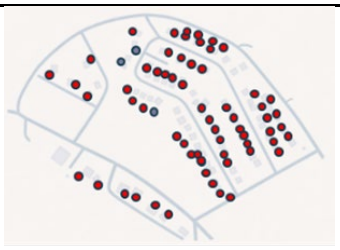
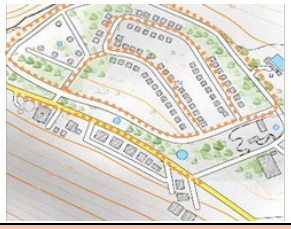


Fig.3: translating visual satisfaction to measurable indicators (Researcher)

Table 2 :Evaluation Check list of Pank resort (Researcher)

(Sub-Strategy)	indicator	Measuring method	Image	Scoring method	assessment
contour Adaptive Layout	Slope Following	The percentage of units located on slopes of <15%, 15–30%, and >30% is calculated and reported.		5: almost all <15%, none >30%; 3: many 15–30%, few >30%; 1: many >30%.	4.5
	Cut-and-Fill Minimization	satellite/sections/photos to identify scar lines, exposed cut slopes, retaining walls. Report earthwork intensity or retaining wall dominance		5: minimal cut/fill; 3: moderate terracing; 1: extensive cuts/retaining dominance.	4
Skyline Subordination		Trace ridgeline and roofline silhouettes. Compute % of buildings intersecting skyline.		5: near-zero skyline intersections; 3: some; 1: frequent skyline cutting.	5
Strategic Placement	Building orientation	aligning buildings with main view or approach axes. Measure façade/roof ridge orientation. Count units within ±30°.		5: ≥70% within ±30°; 3: 40–69%; 1: <40%.	4.4
	Low-Density on Slopes	site coverage (mass) with slope suitability (% units on steep zones)		5: almost all <15%, none >30%; 3: many 15–30%, few >30%; 1: many >30%.	4.8
Spatial Legibility & Wayfinding	Readable building sequences along main routes	building arrangement forms clear sequential progression along main paths/roads.		5: strong sequence clarity; 3: partial; 1: unclear/random arrangement.	4.5
	Clear hierarchy & recognizable centers	Check if resort has identifiable main nodes/ centres (plaza, reception, core zones) and clear route hierarchy.		5: clear hierarchy + strong centres; 3: moderate; 1: no readable hierarchy.	5

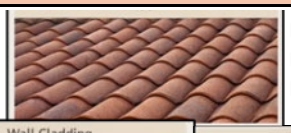
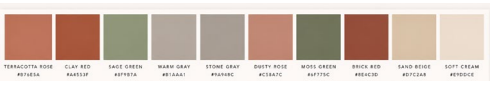
	Landmark & view cues for wayfinding	Identify visible cues (distinct buildings, plazas, trees, view corridors) from key nodes.		5: strong cues at key decision points; 3: limited cues; 1: no cues.	3
Architectural Massing & Proportion					
Low Visual Massing	Building height and bulk	Assessing number of stores, roof mass, and overall building profile from viewpoints.		5: minimized bulk; 3: partial; 1: dominant bulky forms.	5
Low Visual Massing	Spacing & fragment	mass is broken into smaller volumes rather than continuous slabs.		5: strong fragmentation; 3: partial; 1: continuous blocks.	5
Low Visual Massing	Stepping with terrain	Evaluating if buildings terrace/setback along slope.		5: fully stepped; 3: partial; 1: no stepping.	5
Scale Adaptation	Vertical vs & scale landform	Assessing facade subdivision, articulation, and stores proportions.		5: strong cues; 3: moderate; 1: oversized.	5
	Horizontal scale & spacing	Evaluating block length,		5: fits terraces; 3: partial; 1: oversized.	5
Contextual Suitability	Fit to local built character	Compare architectural language with local vernacular patterns.	 	5: strong fit; 3: partial; 1: alien character.	3.25
Rhythm	Façade rhythm	Check repetition of window bays/balconies/structural grid.		5: clear rhythm; 3: partial; 1: irregular.	3
	Site rhythm	Compute % units following same typology/module.		5: strong repetition; 3: mixed; 1: no pattern.	3
Transparency Balance	Transparency Balance	glazing dominance and openness		5: balanced; 3: moderate glazing; 1: excessive reflective glass.	3
Spatial & Circulation Form					

Clustered Development		Measuring nearest-neighbor distances. Compute % units within 25–30 m.		5: ≥70% clustered; 3: 40–69%; 1: mostly sprawled (>50 m).	4.5
Mass & Space Ratio		Compute built footprint ÷ site area (%).		≤5%=5; 5–10%=4; 10–20%=3; 20–30%=2; ≥30%=1.	5
Curvilinear Circulation		Calculate road sinuosity index and evaluate contour-parallel alignment.		5: SI >1 contour-following; 3: mixed; 1: straight cross-slope.	5
Roof & Skyline Design					
Roof & skyline design	Roof slope consistent with	Roof geometry affects skyline contrast and harmony. paranomal image sused to check		5: close match; 3: partial; 1: alien roof geometry.	4
Materiality & Surface Treatment					
Natural Materials	Roofs	Classified as natural/processed/synthetic mimic/industrial.		5: mostly natural; 3: mixed; 1: synthetic dominant.	3
	Facades	façade material type and authenticity.		5: natural dominant; 3: mixed; 1: synthetic dominant.	4
	Door	Classify as natural/processed/synthetic mimic/industrial.		5: natural; 3: mixed; 1: industrial/plastic.	2.5
	Windows frame	natural/processed/synthetic mimic/industrial.		5: natural/processed; 3: mixed; 1: industrial/plastic.	1

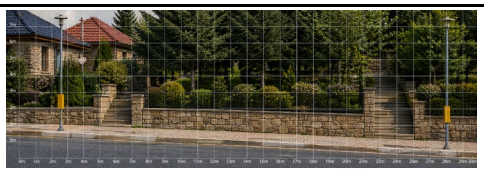
	Walkways	paving material type.		5: natural; 3: mixed; 1: harsh asphalt/concrete dominance.	3.6
	Fences	fence material and finish.		5: natural; 3: mixed; 1: industrial metal dominance.	4

Calculation of the materials is due to their ratio in the sceen,They do not affect equally ,for example

element	score	Percentage ratio	Score *ratio		Final score
roofs	3	0.3	0.9	2.8	**3.5**
facades	4	0.4	1.6		
door	2.5	0.05	0.125		
windows frame	1	0.25	0.25		
walkways	3.6	1	3.5	3.5	
fences	4	1	4	4	

Materiality & Surface Treatment (reflectivity)					
Reflectivity	Roofs	Using Albedo: A Reflectance App to measure surface reflectivity		5: matte; 3: moderate; 1: strong glare.	4.5
	Facades	Using Albedo: A Reflectance App to measure surface reflectivity	 	5: matte; 3: mixed; 1: high reflectance.	4.5
	Door	Using Albedo:A Reflectance App to measure surface reflectivity		5:non reflective; 3: moderate; 1: shiny/high glare.	3.5
	Window	Using Albedo: A Reflectance App to measure surface reflectivity		5: controlled; 3: moderate; 1: strong glare dominance.	2
	Walkways	Using Albedo: A Reflectance App to measure surface reflectivity		5: matte; 3: moderate; 1: high gloss.	4
	Fences	Using Albedo: A Reflectance App to measure surface reflectivity		5: matte/natural; 3: mixed; 1: reflective metal.	4
Final score :**4**					
Materiality & Surface Treatment (color integration)					
Color integration	Roofs	color meter Application has been used to Compare roof palette with landscape tones.		5: earth-tone; 3: mixed; 1: bright/high contrast.	4.5

	Facades	color meter Application has been used to Compare facade palette with landscape tones		5: earth-tone; 3: mixed; 1: bright/high contrast.	5
	Door	color meter Application has been used to Compare door's color with the range of natural tones		5: natural tones; 3: moderate; 1: bright/white.	4.5
	Window frame	color meter Application has been used to Compare the farame's color with the range of natural tones		5: integrated; 3: moderate; 1: strong contrast.	2
	Walkways	color meter Application has been used to Compare walkway's palette with landscape tones		5: earth-tone; 3: mixed; 1: bright/high contrast.	3
	Fences	color meter Application has been used to Compare fence's palette with landscape tones		5: earth-tone; 3: mixed; 1: bright/high contrast.	4.5
Final score:**3.25**					
Materiality & Surface Treatment (texture)					
texture	Coarseness	Assessing texture grain scale (stone/rough plaster vs smooth).		5: coarse context-like; 3: moderate; 1: smooth dominance.	3
	Depth / relief	Assessing texture grain scale (stone/rough plaster vs smooth).		5: deep multi-layer; 3: moderate; 1: flat.	3
	Pattern regularit			5: coherent; 3: moderate; 1: harsh artificial.	4
Final score:**3.4**					
Landscape Integration					
Layered Planting	Number of layers of greenery	presence of groundcover /shrubs / understory/ canopy and planting depth.		5: strong multi-layer; 3: partial; 1: minimal.	5

Native Plant Use	Native Plant Use	Estimate native cover %, check exotics dominance, match local community.		5: mostly native; 3: mixed; 1: exotic dominant.	4.4
Seasonal Visual Interest	Seasonal Visual Interest	Seasonal interest log: spring/summer/autumn/winter cues.	 	5: strong in 3–4 seasons; 3: 2 seasons; 1: 1 season.	4
Visual Buffers & Screening	Vertical Screening	photo grid overlayed to estimate % façade obscured.		5: strong screening; 3: partial; 1: minimal.	4
Visual Buffers & Screening Edge Transition	Horizontal Continuity	% of edge length buffered from plan/satellite.		5: continuous; 3: partial; 1: discontinuous.	4
	Edge Transition	edge depth, treated edge length %, and graded profile.		5: graded transition; 3: partial; 1: abrupt edge.	3
Visual Liability Control	Visual Liability Control	Assess whether service zones are separated from key view corridors.		5: well segregated; 3: partial; 1: mixed with scenic areas.	3
Visual Liability Control	Visual Liability Control	Evaluate quality of screening and finishing of service structures.		5: high quality; 3: moderate; 1: poor/no treatment.	3

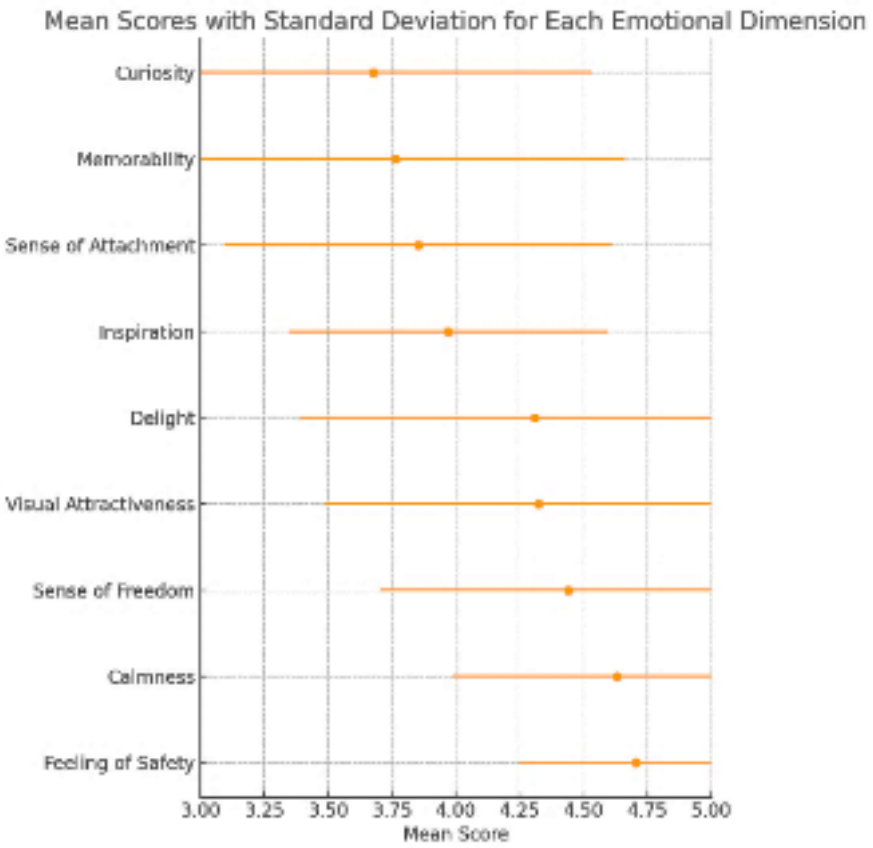


Fig. 4: Graph of Mean Scores with Standard Deviation for Each Emotion (Researcher)

Table 4: strategies selected related to Calmness Mean (Researcher)

Design Strategies	Mean Score	Std. Dev.	CV	Relevance	P-Value
Terrain adaptive	4.53	0.78	0.17	57.10%	0.545
Use of natural materials	4.88	0.34	0.07	34.30%	**0.011**
scale adaptation	4.82	0.39	0.08	31.40%	0.056
Roof slope consistent with mountain form	4.24	0.94	0.22	30.00%	**0.012**
native plant use	4.4	0.75	0.17	28.60%	0.219
Layered plant design	4.26	0.99	0.23	27.10%	**0.031**
Spatial Legibility & Wayfinding	4.71	0.47	0.1	20.00%	0.419

Table 3 : Mean Scores with Standard Deviation for Each Emotion (Researcher)

No.	Emotional Dimension	Mean	SD	CV (%)	RI (%)
1	Feeling Calmness	4.73	0.49	10.36	94.58
2	Visual Attractiveness	4.50	0.66	14.67	90.00
3	Sense of Freedom	4.43	0.69	15.58	88.67
4	Feeling of Safety	4.61	0.57	12.39	92.17
5	Inspiration	3.96	0.72	18.18	79.17
6	Sense of Attachment	4.09	0.71	17.36	81.83
7	Memorability	4.16	0.67	16.11	83.25
8	Delight	4.21	0.74	17.58	84.17
9	Curiosity	4.01	0.81	20.20	80.25

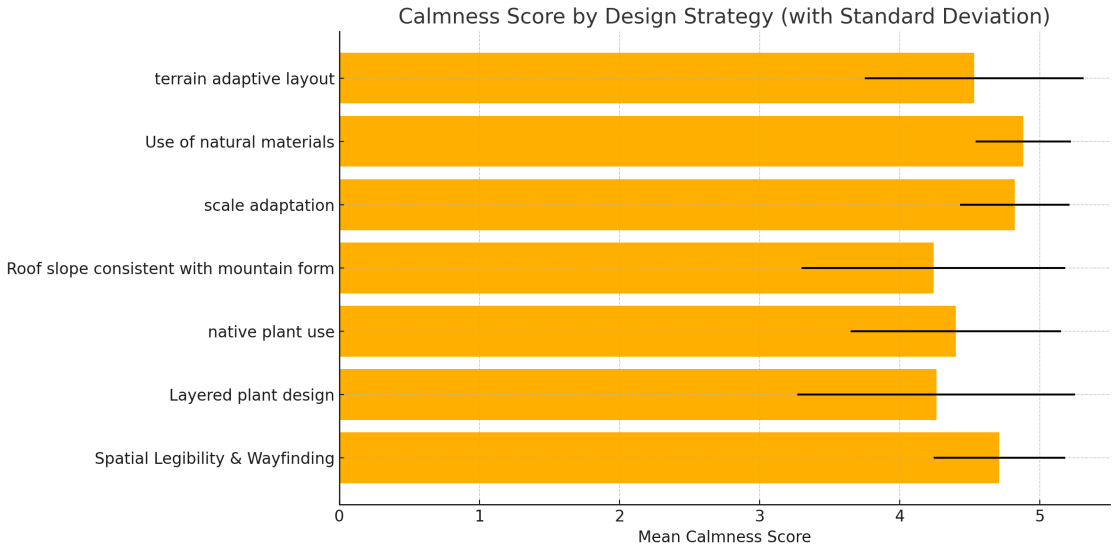


Fig. 5: Graph of strategies selected related to Calmness Mean (Researcher)

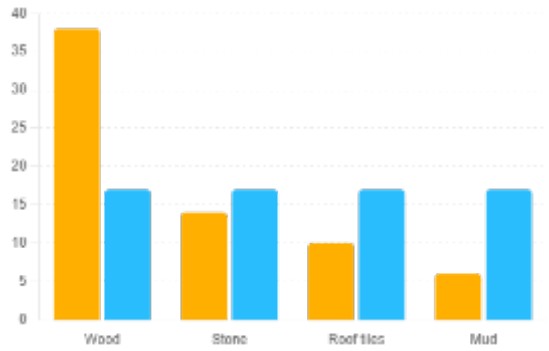


Fig. 6 : Natural material selection statical analysis graph (Researcher)

Table5: Natural material selection (Researcher)

Material	Observed Frequency	Expected Frequency
Wood	38	17.00
Stone	14	17.00
Roof tiles(terracotta)	10	17.00
mud	8	17.00

Table 6 : Statistical Analysis of Spatial Strategies Affecting Perceived Safety (Researcher)

Feature	Mean Score	Standard Deviation	Coefficient of Variance	Relevance	P-Value
Use of soft elevation transitions	4.761	0.431	0.091	0.657	0.238
Path clarity and connectivity	4.692	0.468	0.1	0.557	0.654
Spatial Legibility & Wayfinding	4.742	0.445	0.094	0.443	0.654
Scale adaptation	4.706	0.47	0.1	0.243	0.931
Visual orientation to open views	4.8	0.422	0.088	0.143	0.524
transparency balance	4.833	0.408	0.084	0.086	0.507

Table 7: Statistical Analysis of Visual Cues Impacting: Selection and Significance (researcher)

Visual Cue	Selection Percentage	P-Value
Greenery & vegetation	86	0.115
Scale of buildings	47	0.948
Color of buildings	33	0.011
Roof forms/styles	24	0.009
Mountainous nature	24	0.393

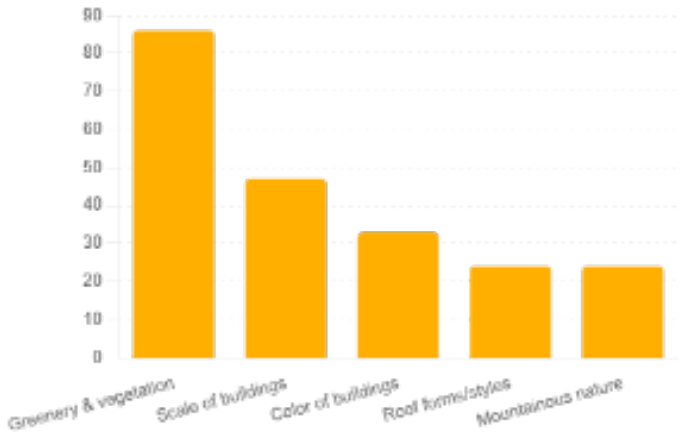


Fig. 7 : Visual Cues Impacting selection statical analysis graph (Researcher)