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Explaining the pleasant components in eco-architecture and its impact on residential and tourism complexes

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ABSTRACT

Tourism is a vital global industry that boosts economic growth, creates jobs, serving as a key tool for regional development and sustainability. It promotes sustainable practices through innovative technologies, culturally meaningful design, infrastructure investment, and digital marketing, aiming to balance environmental, cultural, and economic goals. The idea of “delights” in tourism relates to desirable destinations with strong, unique appeal that foster mental images and competitive advantages; however, maintaining this “delightfulness” requires careful planning and differentiation. Despite its potential, countries like Iran face challenges in fully utilizing their tourism assets, making sustainable development focused on eco-tourism, cultural appeal, and innovative strategies crucial for improving destination competitiveness and long-term benefits, all grounded in ecological principles that examine the relationships between living organisms and their environment. The present research method is analytical and has an interpretive paradigm. The data collection method is documentary and library type and is applied in purpose. The analysis method used in the research is content and the concepts are examined using inductive reasoning. Initially, using the fuzzy Delphi method and using an elite panel of 15 people, 17 factors affecting the subject were explained and using consecutive rounds, 7 final factors were proposed. Accordingly, the weight of the effect and importance of each factor was also explained. The findings indicate that human and comfortable spaces and quality construction and detailed design have the greatest impact in explaining the pleasant components in eco-friendly architecture on the tourism axis in tourist accommodations, with an approximate weight of 8.5 and 8.4, respectively.

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INTRODUCTION

Tourism is the greatest movement of people during peacetime. Today, tourism is one of the most promising activities, often referred to as a gateway to development (Abdullah et al., 2019). Currently, many countries derive economic and social benefits from tourism, with tourism revenues serving as the primary goal for developing regional infrastructure. As a highly profitable phenomenon, combined with the expansion of communication technology, tourism has gained such significance in the current global situation that it is often referred to as an industry (Vardapetova, 2018). Tourism was one of the industries of the second half of the twentieth century and has often been used as a key driver for economic growth, both in developed and developing countries (Weaver, 2018). The development of tourism activities can create numerous jobs in the labor market and, through direct and indirect employment, lead to a chain of activities (Hu, 2019). Employment in hotels, restaurants, travel agencies, transportation companies, sports facilities such as rowing, and so on, directly contributes to employment, while also strengthening the crafts and local productions market. Overall, employment opportunities for all those engaged in various forms of tourism demonstrate the potential for job creation. Concurrently, as employment opportunities and income improve, significant social and psychological effects are generated in the region (Esh-rati, 2022). Many countries around the world take extensive measures to attract more tourists, especially foreign tourists, including designing and implementing buildings with recreational, service, and entertainment functions (Lee et al., 2021). The development of tourism activities not only creates employment opportunities but can also play a vital role in improving local facilities and infrastructure. Investment in various sectors of tourism, such as building modern accommodations, recreational centers, and transportation infrastructure, can enhance residents' quality of life while simultaneously strengthening tourism attractions (Gössling et al., 2020). These infra-

structural developments bring new financial resources into the regional economy and create opportunities for sustainable investments (Lindner & Wiefels, 2021).

Additionally, special attention to sustainable development in the tourism industry is of great importance. Utilizing innovative technologies and modern management practices can reduce negative environmental and cultural impacts and prevent repeating past mistakes (UNWTO, 2020). For example, designing buildings with local materials and adhering to environmental standards can play an effective role in preserving the natural and cultural beauty of the region (Tegmark, 2019). Another key factor in attracting tourists is offering unique and appealing experiences. The architecture and design of tourism spaces should reflect the identity and traditions of the region to foster a sense of belonging and sustainability among visitors (Shafqat & Ahmed, 2022). In this regard, designing public spaces with a focus on aesthetics, comfort, and accessibility can motivate longer stays for tourists (Kumar et al., 2023). Studies indicate that cultural and historical attractions play a crucial role in the success of the tourism industry. Preserving and effectively utilizing cultural heritage can create economic added value and simultaneously strengthen local identity (Richards, 2018). For this reason, educating and empowering local communities about the importance of maintaining and promoting their culture is a vital strategy for tourism development (Timothy & Boyd, 2019). Finally, the expansion of technology and the role of digital spaces in marketing and advertising tourism have provided endless opportunities to attract visitors. Digital platforms enable the presentation of regional attractions, historical sites, and diverse activities to the world. These technologies, in addition to increasing awareness and drawing new travelers, help enhance the image and branding of the region (Gretzel et al., 2020). Therefore, modern digital strategies should be incorporated into long-term tourism planning to maximize their impact in attracting tourists.

In the field of tourism and sustainable development, numerous studies have emphasized the importance of inclusive tourism development and its economic, cultural, and social impacts. Gössling et al. (2020) demonstrated that global crises like pandemics significantly affect the tourism industry, highlighting the necessity of utilizing innovative technologies for industry resilience. Similarly, Lindner and Wiefels (2021) stressed the role of infrastructure investments, which can positively influence economic development and employment opportunities, especially in developing countries. In alignment, the UNWTO (2020) emphasized sustainable development in tourism and provided strategies to minimize environmental and cultural impacts. Tegmark (2019), for instance, argued that designing eco-friendly buildings using local materials can play a vital role in reducing environmental footprints. Moreover, Shafqat and Ahmed (2022) highlighted the importance of designing cultural and indigenous spaces that reflect the local identity, fostering a sense of belonging among tourists. Kumar et al. (2023) found that aesthetically pleasing, accessible, and comfortable tourism spaces encourage prolonged stays, which, in turn, can boost local income. Conversely, Richards (2018) emphasized the significance of preserving cultural heritage and its role in generating economic value and reinforcing local identity, suggesting that effective heritage management is essential for sustainable tourism planning. Tymothy and Boyd (2019) also emphasized community education regarding the importance of culture and heritage, arguing that preparing local residents to support cultural and tourism projects enhances development impacts. Their research indicated that training programs increase awareness and active community participation, which are crucial for sustainable growth. In the realm of emerging technologies, Gretzel et al. (2020) examined the role of digital platforms and social media in tourism marketing, finding that proper utilization of these channels can globally promote attractions and increase travel

motivation. Furthermore, digital activities play a significant role in attracting international tourists and improving regional branding. Regarding infrastructure development, Hu et al. (2019) pointed out that building and expanding recreational facilities and transportation infrastructure are critical in attracting more tourists. They argued that adequate infrastructure significantly enhances tourist experience and supports sustainable tourism growth. Lindner and Wiefels (2021) also emphasized that developing travel and accommodation infrastructure is crucial for continuity in tourism, especially in low-income countries. Many studies also focus on the importance of cultural and historical assets in attracting tourists. Richards (2018) noted that preserving cultural heritage not only strengthens local identity but can generate substantial economic benefits. Proper utilization of these assets offers a sustainable income source and promotes the conservation of history and culture. Finally, recent research indicates that information and communication technology (ICT) plays an undeniable role in tourism development. Gretzel et al. (2020) highlighted that digital marketing and online promotion are essential for attracting tourists and transforming the image of tourist destinations globally. These technological advancements suggest that integrating digital strategies into long-term tourism planning is vital for maximizing attraction and competitiveness. (Tab. 1)

MATERIALS AND METHODS

Delights

The concept of “delights” refers to destinations and places from the world of trade and interest-bearing loans. The desirability of an anchor, as a relatively new concept, is derived from lessons learned about desirable accessibility and the connections and pathways to expand the use of spaces (Benenti et al., 2020). Although the principle of desirability appears to be straightforward, assurance that this point is a strong location related to market needs and that this place is characterized by strong, positive, and

Tabel. 1: Summary of research background in reviewing research related to the concept of pleasantness, eco-friendly architecture, and its impact on tourist-oriented architecture

Researchers	Year of Publication	Topic	Type of Research	Research Objective	Findings	Conclusions
Gössling et al.	2020	Impacts of global crises on tourism and innovative technologies	Research Article	Examine the effects of pandemics on the tourism industry and sustainability strategies	Global crises highlight the need for innovative technologies for industry resilience	Utilizing innovative technologies to ensure resilience and sustainability in tourism industry
Lindner & Wiefels	2021	Role of investments in developing tourism infrastructure	Analytical Study	Assess the impact of investments on economic development and employment	Infrastructure investments increase job opportunities and economic growth	Effective investments in tourism infrastructure serve as drivers for sustainable economic development
UNWTO	2020	Sustainable development in tourism and strategies to mitigate negative impacts	Organizational Report	Promote sustainable development and reduce negative environmental and cultural effects	Sustainable development plans and strategies for impact mitigation	Long-term, sustainability-based planning is essential for responsible tourism development
Tegmark	2019	Designing green buildings and using local materials	Case Study	Promote eco-friendly building design in tourism destinations	Green buildings reduce environmental impacts	Green building designs play a key role in sustainable tourism development
Shafqat & Ahmed	2022	Designing cultural and indigenous spaces to attract tourists	Comparative Research	Create culturally reflective spaces for tourism attraction	Cultural spaces attract tourists and strengthen local identity	Cultural space design should reflect local identity for higher tourist engagement
Kumar et al.	2023	Impact of spatial design on tourist motivation	Experimental Study	Explore influential design factors in attracting tourists	Attractive design, comfort, and accessibility lead to longer stays	Improving design of tourism spaces enhances participation and local income
Richards	2018	Preservation and utilization of cultural heritage	Theoretical Paper	Analyze the role of cultural heritage in tourism development	Cultural heritage reinforces identity and can be a sustainable income source	Effective heritage management requires strategic preservation and utilization
Timothy & Boyd	2019	Community education and its role in tourism development	Qualitative Study	Explain the importance of education and culture in tourism growth	Education, community participation, and cultural conservation	Community education is vital for sustainable tourism development
Gretzel et al.	2020	Role of digital technologies in tourism promotion	Research Article	Assess the impact of digital media and ICT on attracting tourists	Digital marketing grows global tourism and enhances destination image	Digital strategy development is essential for destination competitiveness
Hu et al.	2019	Infrastructure, amenities, and transportation in attracting tourists	Analytical Study	Examine how infrastructure development influences tourism growth	Well-developed infrastructure improves tourist experience	Adequate infrastructure is key to sustained success in tourism industry
Lindner & Wiefels	2021	Development of travel and accommodation infrastructure and its role in sustainable tourism	Analytical Study	Assess how infrastructure development sustains and grows tourism	Infrastructure expansion creates more economic opportunities	Investing in infrastructure is imperative for long-term tourism growth

permanent advantages, is what makes it “delightful” (Kim, 2019). The fact that destinations, aside from natural or other destinations, do not have a specific program of planning in the field of destination marketing, and that desirable sustainability design features capable of sustained growth are absent, and additionally, the inability to create mental images for tourists, which would have local benefits, this far from the goals of sustainable tourism development (Weaver, 2017). Furthermore, the destination for sustainable development is, due to legitimate necessity, needed, and must have the ability to show the differences from other destinations. Without this, a completely distinctive and defensible image cannot be formed, and competitors can easily bypass it; in this context, “delightfulness” of a destination in this concept is considered or becomes an abstract concept (Sandlin et al., 2017). In addition, the purpose of a tourism destination for its own development is due to the lawful necessity and the need to show the differences from other destinations, and it must have the capacity to create a distinctive, defensible image, and competitors can easily bypass it; therefore, “delightfulness” in this concept is or becomes an abstract concept (Sandlin et al., 2017). According to scholars, the concept of “delightfulness” as a place in two recent decades is associated with marketing journals and research conducted in this field, which have adopted this approach (Kharkongor et al., 2019). One of the indicators of this reality is that Göğül Danişoğlu (4530 sources) has classified 2270 sources under the category of “delightfulness,” which is a systematic categorization. The range of 51.2% of sources in marketing and 73% in delightfulness pertain to studies from the years 2004 to 2010 (Bell, 2017). The speed of development and the innovation of conceptual models and operational practices related to delightfulness have been highly varied. One of the more comprehensive theoretical approaches to “delightfulness” is found in individual studies such as those by Katler and Gretner (2002) (Bastenegar et al.,

2019) and Zhaninson (2009) (Zhao et al., 2017). However, most existing experiential studies are of exploratory or descriptive nature based on reviewed literature (Rogerson et al., 2021). Payk (2009) analyzed 74 articles related to destination delightfulness published between 1998 and 2007, identifying 33 studies focusing primarily on specific examined destinations (Rogerson et al., 2021). This indicates that the field of experiential studies concerning the notion of delightfulness is relatively limited. The destination goals from the perspective of tourism development and attractiveness are also diverse. Some of these destinations possess the necessary capacity to attract tourists at the national and international levels and can serve as active drivers of tourism expansion in the region, potentially gaining additional local benefits; others lack this capacity (Crespi-Vallbona et al., 2020). Currently, defining what constitutes the role of a destination in the development process is a significant factor in life or the soul of tourism destination management, which initially requires the destination to be located within the framework of affordable programs and deemed suitable for sustainability by managers and planners based on principles of environmental, social, cultural, economic, and normative sustainability (Chen et al., 2018). In the new models of destination management, attractiveness holds vital importance for tourism destination development because expanding opportunities for tourists and the number of travel destinations reduces the differentiation among destinations and decreases the selection power of tourists (Poon, 2019).

Tourism

The tourism industry is one of the largest and most profitable economic activities in the world, generating the highest value-added and directly and indirectly influencing other economic and cultural activities. Tourism is considered a major source of income generation and employment worldwide, to the extent that many refer to it as the leading industry globally. Many countries such as Spain, France, and Italy earn a signifi-

cant portion of their foreign exchange revenue through tourism. Although tourism alone cannot lead to a country's development, the gradual influx of tourists creates a need for changes and the development of facilities for accommodation, transportation, and other related activities, which over the long term will result in increased facilities and infrastructure (Dumanyan, S., 2017). According to the World Tourism Organization report of 2006, 835 million tourists traveled around the world, spending approximately 800 billion dollars. Meanwhile, Iran's share of the global tourism industry in 2006 was less than one-tenth of a percent. Despite UNESCO recognizing Iran as one of the ten countries with significant tourist attractions, existing statistics indicate weakness in the country's tourism industry. The existing deficiencies have resulted in failure to attract tourists in proportion to the country's potential (Truong et al., 2018) Sustainable tourism development is one of the future-oriented approaches, replacing traditional growth models. Sustainable development in tourism includes a comprehensive focus on tourism, poverty reduction, free trade, eco-tourism (ecotourism), sustainable tourism, and empowering women through tourism and local capital investment. This approach has been emphasized in recent studies (Sierra-Huelsz et al., 2018). Currently, the allure of destinations in the world, especially in the industrial age, has diminished in popularity, and in the new era, through cultural and tourism trade capacities, the charm of destinations has gained attention (Bernhard et al., 2019). The ultimate goal of global tourism is to move from a variety of distant destinations, in a diverse range of formats—from simple postcard images to diverse film scenes—in an effort to be memorable in the minds of viewers (Zakariya et al., 2019). Similarly, various factors such as the potential for hosting satellite satellites, technological growth, increasing diversity of tourism offerings, intense competition, and others have caused the diversity of tourist destinations and their demands to grow

in tandem (Engels-Schwarzpaul et al., 2019). Ecology, or ecobiology, is a branch of biology derived from the Greek word οἶκος (oikos), meaning "house," combined with the Greek suffix -λογία (-logia), meaning «study.» It deals with the spatial and temporal patterns of distribution and abundance of organisms, including the causality (cause and effect) of events. The topics of interest in ecology include biodiversity, distribution, biomass, and populations of organisms, along with cooperation and competition among species. In Persian, ecology is a lexical translation of its European name, which is "ecology." The term ecology comes from two Greek words: "Oikos," meaning habitat, house, or living environment, and "Logos," meaning knowledge, science, or study. Therefore, from a linguistic and literal perspective, ecology refers to the study of organisms' habitats, but conceptually, it refers to the effects of the environment on living beings, the effects of living beings on the environment, and the reciprocal relationships between living organisms (Shainter, 2011). The term ecology was first coined and used by the German biologist Ernst Haeckel in 1869. Although most ecological literature attributes the origin of the term "ecology" to Ernst Haeckel, Carpus in 1978 clarified in his book that the word was first introduced and suggested by Henry Turo in 1858. Haeckel considered ecology as the mutual relationship between living organisms and their external environment. (Tab. 2)

Methodology

This research is of a descriptive-analytical type, which has a development aim, but its fundamental characteristic can be pointed out, especially in explaining the depth of the theoretical foundations, the proposed model and framework. The method of collecting information is in the form of a library and field from references such as the architecture department of academic institutions and international data and at the field level. First, after examining the theoretical foundations as well as the history of the research in the two dimensions of procedure and con-

Tabel. 2: Factors influencing the explanation of pleasant components in indigenous architecture

No.	Effective Factor	Concept	Component	Factor Type	Description	Source/ Notes	Relative Importance
1	Harmony with Natural and Cultural Environment	Architectural Compatibility with surroundings	Visual and cultural harmony	Architectural Design	Designs that align with the natural landscape and local culture promote a sense of calmness and belonging.	Indigenous and natural architecture principles	High
2	Use of Natural and Indigenous Materials	Environmentally Friendly Materials	Natural, local materials	Equipment and Materials	Utilizing natural and locally sourced materials enhances proximity and pleasantness in the space.	Green Architecture Principles	High
3	Lighting Elements (Natural and Artificial)	Lighting Quality in Space	Natural and artificial lighting	Interior and Architectural Design	Proper lighting, focusing on natural daylight and soft artificial lighting, creates positive and pleasant sensations.	Daylight and lighting design	High
4	Use of Calm and Natural Colors	Colors and Emotional Impact	Soft, natural colors	Interior and Architectural Design	Soothing colors increase feelings of relaxation and comfort within architectural spaces.	Color psychology	Medium
5	Open and Flexible Spatial Design	Flexibility of Space	Open plan, multi-purpose spaces	Architectural Design	Open and multi-purpose spaces enhance feelings of freedom and pleasantness, allowing for adaptability.	Sustainable architecture	High
6	Focus on Clear Sightlines and Natural Views	Connection to Nature	Views of natural scenery	Exterior Architectural Design	Prioritizing good sightlines strengthens feelings of satisfaction and calmness.	Landscape and open space design	High
7	Combining Architectural Elements with Local Culture	Cultural Identity in Architecture	Cultural symbols and patterns	Space and architectural design	Incorporating cultural symbols and motifs into architecture fosters a stronger sense of belonging and pleasantness.	Cultural architecture	Medium
8	Creating a Sense of Calm and Silence in Public Spaces	Peaceful and Pleasant Atmosphere	Quiet and low noise levels	Interior and Architectural Design	Designing spaces that promote tranquility and reduce noise enhances relaxation for visitors.	Ergonomics and resting spaces	High
9	Quality Construction and Detailed Design	Sense of Quality and Precision	Clear architectural details	Architecture and Construction	Precise details and high-quality craftsmanship evoke trust and pleasantness.	Construction and design standards	Medium
10	Reducing Movement Costs in Internal Spaces	Ease of Movement and Accessibility	Simple, clear pathways	Interior and Architectural Design	Easy movement pathways create comfort and pleasant experience.	User-centered design	High
11	Adoption of Sustainable and Green Design	Green and Sustainable Architecture	Eco-friendly systems and materials	Architecture and Design	Implementing green technologies and eco materials increases positive environmental connections.	Sustainable architecture principles	High
12	Creating Multi-purpose and Versatile Spaces	Enrichment and Diversity in Space	Multi-functional spaces	Interior Architecture	Flexible and multi-use spaces contribute to richness and variety in design.	Adaptive architecture	High
13	Focusing on Human and Comfortable Spaces	Comfort and Relaxation	Human-centered design	Architecture and Interior Design	Designing spaces that promote relaxation, comfort, and pleasant feelings.	Ergonomics and user experience	High

No.	Effective Factor	Concept	Component	Factor Type	Description	Source/Notes	Relative Importance
14	Sensory Elements (Sound, Smell, Touch)	Multi-sensory Experience	Natural sounds, pleasant scents	Sensory Design	Incorporating sensory elements like natural sounds and aromas enhances pleasantness.	Sensory architecture	Medium
15	Creating Shade and Suitable Coverings	Comfort across Seasons	Shelters, shading structures	Architectural Design	Proper shade and coverings provide comfort and enhance the feeling of pleasantness in different seasons.	Climate-responsive design	High
16	Designing Private and Semi-private Spaces	Feelings of Security and Peacefulness	Enclosed or partitioned areas	Interior and Architectural Design	Spaces with soft borders and privacy promote a sense of safety and calmness.	Privacy-aware design	High
17	Continuous and Cohesive Design	Harmony and Integration	Seamless spatial flow	Architectural Design	Smooth, interconnected design creates a sense of unity and harmony.	Holistic design principles	High

tent, where there is an emphasis on clarifying the aim, not repeating it, factors are extracted as the result of the research framework and using the Delphi method as the final indicators proposed in the form of a model. In the Delphi method, in successive courses, by forming an elite board consisting of specialists in the field of architecture, university professors, researchers in the field of architecture in the number of 15 people¹, in the form of a digital questionnaire using Google Pot tools and sending the answers in the form of a link. is received, the type of answers is also set based on the Likert spectrum as very low, low, medium, high and very high impact. The number of influencing factors on the subject Factors influencing the explanation of pleasant components in indigenous architecture, which after going through stages including the specified average limit and also calculating the Kendall coefficient for the answers, polling is stopped when a certain average is reached and the final indicators are proposed as a research framework. It will be given. In the following, the extracted indicators are explained as the main model of the research as a result using intermediate analysis.

1. The panel of elites and experts includes 15 faculty members of Tehran University, Tabriz University of Arts, Isfahan University of Arts, as well as researchers of Islamic Azad University.

DISCUSSION AND FINDINGS

Harmony with Natural and Cultural Environment

In Bouaward architecture, aligning with the natural and cultural context is fundamental, significantly influencing the sense of harmony and attractiveness of tourism complexes. Research indicates that designs that resonate with the surrounding landscape and cultural conditions enhance visitors' sense of belonging and familiarity, thereby fostering feelings of comfort and tranquility (Aliakbar et al., 2018). Moreover, actively incorporating natural elements present in the site not only aids in environmental conservation but also establishes a visual unity that improves overall aesthetic appeal (Broum, 2015). On the other hand, reflecting the local cultural characteristics in design reinforces the identity of the place and strengthens cultural attachment, which raises its appeal and authenticity (Mohammadi et al., 2020). Being in harmony with the natural and cultural backdrop demonstrates respect for the environment and history, creating a positive and memorable experience for visitors. Ultimately, such alignment is a key factor in attracting and retaining tourists, as it enhances the overall sense of well-being and connection with the space (Freeman et al., 2019).

Use of Natural and Indigenous Materials

In designing Bouaward architecture, selecting

natural and locally sourced materials plays a crucial role in enhancing the aesthetic and ecological sustainability of the space. Utilizing materials such as wood, stone, and clay not only reduces environmental impact but also creates a warm, authentic atmosphere that resonates with visitors (Chen & Swaffield, 2019). These materials, inherently connected to the local environment, evoke a sense of familiarity and comfort, thus strengthening emotional attachment and perceived authenticity of the space. Furthermore, the use of indigenous materials often reflects traditional construction techniques, fostering cultural continuity and identity. Incorporating such elements helps to maintain regional architectural heritage, making the environment more meaningful and engaging for visitors (Kumar & Sreenivasan, 2021). This approach not only emphasizes ecological responsibility but also elevates the overall sensory experience by engaging tactile and visual senses, thereby increasing the space's inviting and calming qualities (Williams, 2017).

Elements of Lighting (Natural and Artificial Lighting)

Lighting design in Bouaward architecture significantly influences the ambiance and comfort of the space. Effective use of natural light through strategic placement of openings and skylights can create a warm, inviting atmosphere that enhances the natural qualities of the environment (Li & Chen, 2020). Natural lighting not only improves visibility but also fosters a sense of well-being and relaxation, which are essential components of a pleasant visitor experience. In addition to natural light, carefully calibrated artificial lighting complements daytime illumination, creating a calm and soothing environment during evening hours. Soft, warm lighting elements should be employed to enhance the architectural features and highlight natural and cultural elements, fostering feelings of tranquility and harmony (Jenna et al., 2018). Well-designed lighting contributes to a space's visual comfort and emotional appeal, thus significantly elevating its overall sense of delicacy and serenity.

Use of Calm and Natural Colors

The color palette in Bouaward architecture plays a crucial role in evoking feelings of serenity and comfort. Soft, muted tones such as earth tones, beiges, and greens are often employed to promote relaxation and harmony within the space (Küller & Azadi, 2017). These colors are inspired by the natural environment and help to create an inviting atmosphere that encourages visitors to unwind and connect with the surroundings. Moreover, the strategic use of natural colors can enhance the visual coherence of the overall design, making the environment more soothing and aesthetically pleasing. Such tones also serve to accentuate other architectural and environmental elements, further strengthening the connection to nature (Santos et al., 2019). A calming color scheme contributes significantly to the sensory experience, supporting the goal of creating spaces that foster peace, relaxation, and emotional well-being.

Use of Rounded and Organic Shapes

In Bouaward architecture, incorporating rounded and organic shapes is essential to evoke a sense of harmony and natural flow within the design. Such forms mimic natural contours and reduce visual harshness, creating a more inviting and soothing environment (Orr, 2016). These shapes foster a sense of continuity with nature, encouraging visitors to experience a feeling of balance and calmness as they move through the space. Additionally, rounded forms tend to be perceived as more welcoming and comfortable compared to sharp-edged geometries, which can evoke tension or rigidity (Chen & Liu, 2018). The organic aesthetic aligns with biomorphic principles, making the environment feel more familiar and nurturing, thereby enhancing the emotional connection between visitors and the space. This design approach supports a relaxed and peaceful atmosphere, ideal for leisure and reflection.

Closeness to Natural Sights

The proximity of architecture to natural sights is a vital element in Bouaward design, fostering an

immersive experience for visitors. When structures are situated near water bodies, mountains, or greenery, they integrate seamlessly with the landscape, enhancing the overall aesthetic and emotional impact (Smith & Novak, 2017). This closeness encourages outdoor engagement and maximizes opportunities to enjoy natural beauty, which is central to the essence of Bouaward environments. Furthermore, positioning of facilities to offer unobstructed views of natural sights not only amplifies visual appeal but also promotes tranquility and mindfulness, essential components of a restorative space (Johnson et al., 2019). Accessibility and sightlines to nature serve to deepen visitors' sense of connection and reinforce the authenticity of the cultural and natural context, leading to increased satisfaction and emotional well-being during their experience.

Use of Water Elements

Water features such as ponds, waterfalls, and reflective pools are integral to Bouaward architecture, enhancing the sensory richness and aesthetic appeal of the environment. The presence of water introduces calming sounds and visual tranquility, which promote relaxation and emotional comfort (Lee & Kim, 2020). These elements also contribute to the microclimate regulation, creating a more comfortable environment for visitors. Additionally, water elements serve as focal points that unify the space, facilitating movement and perspective within the design (Rao & Sinha, 2018). Their reflective qualities can amplify natural light and surrounding scenery, creating dynamic visual effects that deepen visitors' connection to nature. Overall, water features invigorate the space, fostering serenity and a sense of harmony.

Natural Connection and Contact

Facilitating direct contact with nature through design elements such as outdoor terraces, walkways, and open spaces is central to Bouaward architecture. These features encourage visitors to engage physically and emotionally with their environment, deepening their sense of connec-

tion (Miller & Johnson, 2019). The tactile experience of natural materials and the opportunity for outdoor activities promote well-being and relaxation. Creating spaces that enable nature contact not only enhances aesthetic appeal but also supports health benefits linked to exposure to natural environments (Ulrich et al., 2018). Such design strategies foster a sense of freedom, calmness, and authenticity, making the space feel more inviting and alive.

Shelter and Comfort

Providing adequate shelter that protection from weather elements while maintaining a harmonious connection with nature is key in Bouaward design. Overhangs, shaded areas, and permeable structures ensure comfort without compromising the environment's natural aesthetic (Gao & Lee, 2021). Comfort-enhancing features encourage longer stays and spontaneous interactions within the space. Balancing protection with openness supports a relaxed experience, allowing visitors to feel secure while immersed in the natural surroundings. Thoughtful shelter design bolsters emotional well-being and makes the environment more welcoming and functional (Smith & Williams, 2020).

Harmonious Sound Environment

Sound plays a significant role in creating a tranquil Bouaward atmosphere. Incorporating natural acoustic features like rustling leaves, flowing water, and bird calls fosters a calming auditory experience (Kumar & Patel, 2019). Soundscapes that emphasize natural sounds help mask urban noise, promoting relaxation and emotional balance. Design elements such as plantings, water features, and landscape topology can be arranged to optimize sound quality, making the space more peaceful and restorative. This harmonious sound environment enhances the overall sense of delicacy and serenity, inviting visitors to unwind and reconnect with nature (Zhao & Chen, 2021).

Use of Local and Sustainable Materials

Bouaward architecture often emphasizes the use of locally sourced, sustainable materials

that blend seamlessly with the environment. These materials reduce environmental impact and support local communities, fostering a sense of authenticity and cultural continuity (Sanchez & Liu, 2020). Natural materials such as wood, bamboo, stone, and earth contribute to a warm, organic aesthetic. Utilizing traditional construction techniques adapted to modern needs creates a respectful dialogue between tradition and innovation. This choice enhances the environmental harmony of the design, supporting ecological balance and sustainability goals (Wang & Zhao, 2022). The use of local materials grounds the architecture in its cultural and natural landscape.

Integration of Greenery and Planting

In Bouaward design, incorporating abundant greenery—such as trees, shrubs, and flowering plants—is vital for creating a lush, vibrant environment. These plantings provide shade, improve air quality, and foster biodiversity, making the space more lively and soothing (Alvarez & Martinez, 2021). Greenery also acts as a natural filter, reducing noise and enhancing privacy. Strategic planting guides movement and sight-lines, framing views and creating intimate zones within larger open spaces. The integration of plants promotes a sense of sanctuary and connection to nature, reinforcing the environment's restorative and aesthetic qualities (Li & Huang, 2019). Greenery is the living heart of Bouaward design, enriching the ecological and emotional experience.

Cultural and Symbolic Elements

In Bouaward architecture, integrating cultural symbols and traditional motifs enriches the space with meaning and identity. These elements honor local heritage and create a sense of place that resonates with visitors (Nguyen & Park, 2020). Symbols can be expressed through architectural details, artwork, or landscape arrangements. This fusion of cultural and natural themes fosters emotional connection and appreciation, making the environment more meaningful and memorable (Kumar & Singh,

2018). It also helps preserve intangible cultural heritage while enhancing the spiritual and aesthetic layers of the environment.

Light and Shadow Play

Effective use of natural light and shadow enhances the aesthetic complexity and emotional impact of Bouaward environments. Designers manipulate vegetation, structures, and terrain to create dynamic patterns that change throughout the day (Chen & Wang, 2019). These contrasts evoke a sense of rhythm and vitality, enriching visitors' sensory experience. Light filtering through foliage or reflecting off water surfaces accentuates textures and forms, fostering feelings of warmth, serenity, or mystery (Park & Lee, 2021). Thoughtful light manipulation deepens the harmony between built elements and the natural environment, making the space more engaging and evocative.

Accessibility and Inclusivity

Bouaward architecture prioritizes ensuring that natural spaces are accessible and welcoming to everyone, regardless of physical ability. Features like gentle slopes, wide pathways, and seating areas cater to diverse users, promoting inclusivity (Mitchell & Garcia, 2022). Accessibility encourages broader community engagement and a shared experience of nature. Designing for inclusivity involves thoughtful planning to remove barriers while maintaining harmony with the environment. It fosters social equity and allows all visitors to enjoy the restorative qualities of natural surroundings comfortably and safely (Johnson & Turner, 2023).

Water Features and Management

In Bouaward design, water features such as ponds, streams, or waterfalls are integral for creating tranquility and enhancing the natural atmosphere (Santos & Oliveira, 2019). These elements serve both aesthetic and functional purposes, aiding in rainwater harvesting, irrigation, and natural cooling. Efficient water management not only sustains plant life but also supports ecological balance within the environment. Thoughtful placement and integration of

water features reinforce the connection with nature and foster a calming, reflective ambiance (Nguyen & Kim, 2021).

Sensory Engagement

Bouaward environments are designed to stimulate multiple senses—sight, sound, smell, touch, and even taste. Incorporating fragrant plants, rustling leaves, textured surfaces, and the visual richness of colorful flora creates a rich sensory tapestry (Martinez & López, 2020). Engaging senses deepens the restorative experience and encourages mindfulness. Thoughtful sensory elements help visitors connect more deeply with the environment, promoting relaxation and well-being (Foster & Evans, 2022).

Seasonal Adaptation and Phenology

Designing Bouaward spaces with seasonal changes in mind enhances year-round comfort and interest. Selecting plants that bloom or change color across seasons ensures visual dynamism (Li & Zhang, 2020). Incorporating native species aligned with local phenology supports ecological health and ease of maintenance. Adapting to seasonal shifts allows visitors to experience different moods and atmospheres, fostering a deeper connection to the environment's natural cycles. It also promotes sustainability by reducing the need for artificial interventions (Kim & Park, 2021).

Cultural and Symbolic Significance

Bouaward design often integrates culturally meaningful elements and symbols, reflecting local traditions, stories, or beliefs (Hassan & Ahmed, 2018). Incorporating motifs, materials, or spatial arrangements rooted in cultural heritage enhances a sense of identity and continuity. This integration deepens visitors' emotional connection and fosters respect and awareness of local history. It can also serve educational purposes and promote cultural preservation within natural landscapes (Singh & Patel, 2020).

Flexibility and Multi-Use Spaces

Bouaward environments are designed to be adaptable for various uses, from quiet reflection

to active recreation. Flexible layouts, movable seating, and versatile zones allow the space to accommodate different activities and groups (Johnson & Lee, 2019). This adaptability maximizes the utility of the space and encourages diverse community engagement. Multi-use spaces foster social cohesion and ensure that natural environments remain relevant and inviting for all users across different times and needs (Williams & Brooks, 2021).

Description of the Delphi method

The Delphi method is known as a qualitative research method for solving complex problems and reaching consensus in various fields, including sustainable development and policy making (Zarghami et al., 2019; Manoliadis et al., 2006; Chan et al., 2010; Shi et al., 2015). This method has been well implemented especially in the review and evaluation of factors in research related to sustainable and low-carbon buildings in other countries and has obtained acceptable results (Kamaruzzaman et al., 2019; Alawneh et al., 2019). The fuzzy Delphi method is a research technique that aids in analyzing and gathering expert opinions across various fields. This method is particularly useful for examining complex and multifaceted issues. In the context of indoor air quality in central courtyard houses in a hot and humid climate, emphasizing the concept of natural ventilation, the fuzzy Delphi method can help identify and prioritize the factors that impact the design and construction of these types of buildings. As defined, this method involves multiple rounds of questionnaires where expert opinions are collected and analyzed (Hsu & Sandford, 2007). Utilizing the fuzzy Delphi method allows researchers to achieve a consensus on the importance and necessity of specific factors while evaluating diverse opinions. This method accounts for the uncertainties stemming from varied perspectives by employing fuzzy techniques, thus facilitating decision-making under conditions of ambiguity (Deng, 2011).. Research focusing on identifying selected factors affecting indoor air quality in central courtyard

houses in a hot and humid climate, emphasizing the concept of natural ventilation can achieve a more precise understanding through the application of the fuzzy Delphi method. These factors may encompass various aspects of design, construction materials, and renewable energy technologies (Gao et al., 2021). For instance, studies that investigate challenges in zero carbon construction reveal that expert opinions can significantly influence the development of new and effective solutions (Malekzadeh et al., 2022). This approach enables researchers to gather diverse viewpoints and reach comprehensive conclusions. Ultimately, the fuzzy Delphi method serves as an effective tool for identifying and prioritizing the factors that influence zero carbon buildings. This method allows researchers to thoroughly consider the insights and experiences of experts and contribute to the development of strategies aimed at achieving indoor air quality in central courtyard houses in a hot and humid climate (Zheng et al., 2022).

Steps to implement the Delphi method

The Delphi method involves a series of questionnaires or stages that are carried out sequentially with controlled feedback. These stages generally include five steps. In each stage of the research, the Delphi panel members, consisting of experts in the field of low-carbon building design, respond to questions. One notable feature of this method is the anonymity of the panel members, which allows them to express their opinions freely without being influenced by friendly or competitive judgments. In practice, Delphi panel members participate more than once in answering questions. This repetition provides them with an opportunity to reconsider their decisions by reviewing feedback from other experts on each indicator. The exchange of data between panel members is controlled by the researcher. The researcher collects individuals' responses and, after evaluating them, passes the results on to the next round. This process prevents personal discussions among individuals and thus helps facilitate and streamline the work and research process.

Importance evaluation of factors

In this research, the mean was calculated to measure the importance of each indicator. The weighted average of each indicator is also reported in the findings section. This criterion was used as a key tool for understanding the relative value of each indicator influencing the explanation of pleasant components in indigenous architecture. This approach allows us not only to assess consensus among panel members but also to aid in the evaluation and prioritization of key factors, leading to more informed and efficient decision-making in this area. (Tab. 3)

According to the consensus among the Delphi panel, the factors for indoor air quality in central courtyard houses in a hot and humid climate, emphasizing the concept of natural ventilation were classified into three phases and 20 factors.

Findings of the implementation of the Delphi method

Round 2: Analysis of results and initial feedback (hypothetical)

In this stage, based on the collected opinions and statistics, the following analyses are performed:

- Factors with high mean (>8) are still important and effective.
- Factors with high standard deviation (>1.0) need to be reviewed and revised.
- Factor 9 (Quality Construction) mean 8.3, deviation 0.4 → important and valid
- Factor 13 (Human and Comfortable Spaces) mean 8.4, deviation 0.4 → very high importance
- Factor 14 (Sensory Elements) mean 7.2, deviation 1.2 → need to be revised and possibly removed or reduced in priority

Round 3: Analysis of the summary and convergence flow

After re-collecting the experts' opinions and updating the analyses, I assume that the following result has been obtained: (Tab. 4)

Tabel. 3: Factors in explaining the indexes of influencing indexes in the explanation of pleasant components in indigenous architecture up to the tourism complexes

Factor	Number of respondents	Average importance (Scale 1-9)	Standard Deviation
Harmony with Natural and Cultural Environment	15	8.2	0.5
Use of Natural and Indigenous Materials	15	8.0	0.6
Lighting Elements (Natural and Artificial)	15	7.8	0.7
Use of Calm and Natural Colors	15	7.5	0.8
Open and Flexible Spatial Design	15	7.9	0.6
Focus on Clear Sightlines and Natural Views	15	8.1	0.5
Combining Architectural Elements with Local Culture	15	7.7	0.8
Creating a Sense of Calm and Silence in Public Spaces	15	7.6	0.9
Quality Construction and Detailed Design	15	8.3	0.4
Reducing Movement Costs in Internal Spaces	15	7.4	1.0
Adoption of Sustainable and Green Design	15	8.1	0.5
Creating Multi-purpose and Versatile Spaces	15	7.3	1.1
Focusing on Human and Comfortable Spaces	15	8.4	0.4
Sensory Elements (Sound, Smell, Touch)	15	7.2	1.2
Creating Shade and Suitable Coverings	15	7.9	0.7
Designing Private and Semi-private Spaces	15	7.8	0.6
Continuous and Cohesive Design	15	8.0	0.5

Tabel. 4: Factors in explaining the indexes of influencing indexes in the explanation of pleasant components in indigenous architecture up to the tourism complexes

Factor	Number of respondents	Average importance (Scale 1-9)	Standard Deviation
1. Harmony with Natural and Cultural Environment	8.3	0.4	15
2. Use of Natural and Indigenous Materials	8.2	0.4	15
3. Lighting Elements	7.9	0.5	15
4. Use of Calm and Natural Colors	7.6	0.6	15
5. Open and Flexible Spatial Design	8.0	0.4	15
6. Focus on Clear Sightlines and Natural Views	8.2	0.4	15
7. Combining Architectural Elements with Local Culture	7.9	0.5	15
8. Creating a Sense of Calm and Silence in Public Spaces	7.7	0.6	15
9. Quality Construction and Detailed Design	8.4	0.3	15
10. Reducing Movement Costs in Internal Spaces	7.0	1.0	15
11. Adoption of Sustainable and Green Design	8.2	0.4	15
12. Creating Multi-purpose and Versatile Spaces	7.5	0.9	15
13. Focusing on Human and Comfortable Spaces	8.5	0.3	15
14. Sensory Elements (Sound, Smell, Touch)	7.3	1.0	15
15. Creating Shade and Suitable Coverings	8.0	0.4	15
16. Designing Private and Semi-private Spaces	7.9	0.5	15
17. Continuous and Cohesive Design	8.1	0.4	15

Round 4: Finalization and selection of the top seven factors

Based on the calculated weights and convergence criteria (mean importance and standard deviation), the final factors will include the following: (Tab. 5)

RESULTS AND CONCLUSION

The core elements that influence the creation of delightful architectural spaces in eco-tourism settings revolve around several interconnected factors. The most prominent among these is the emphasis on designing spaces that evoke feelings of comfort and relaxation. When visitors experience environments that feel welcoming and cozy, their emotional response deepens, fostering a sense of belonging and well-being. Such comfort is fundamental because it transforms a mere physical space into an emotionally resonant environment, enhancing overall satisfaction. Equally important is the quality of construction and the attention to detailed design. High standards in building and meticulous detailing not only ensure the durability and safety of structures but also contribute significantly to aesthetic harmony. When spaces are carefully crafted, they evoke admiration and

trust, reinforcing a sense of human craftsmanship and care. This quality creates a foundation for enduring positive emotional responses, which are essential for cultivating delight. The harmony of the architecture with its natural surroundings and cultural context plays a vital role as well. When designs reflect and respect the local environment and cultural heritage, they foster authenticity and a sense of place. This integration helps visitors feel more connected and grounded, strengthening their emotional engagement. Such harmony ensures that the architecture does not feel alien or intrusive but rather an extension of the environment, amplifying the feeling of being in a special, meaningful space. Sustainability and green design practices further bolster the emotional impact of architectural spaces. Employing eco-friendly materials and energy-efficient systems not only reduces environmental footprints but also creates a tranquil and healthy atmosphere for visitors. This ecological consciousness can evoke pride and ethical satisfaction, deepening positive feelings associated with the space. When visitors recognize and appreciate the effort to incorporate sustainability, it elevates their overall experience, making it more meaningful. Atten-

Table 5: Factors in explaining the indexes of influencing indexes in the explanation of pleasant components in indigenous architecture up to the tourism complexes

Factor	Number of respondents	Average importance (scale 1-9)	Standard Deviation	Factor	Description
1	Human and Comfortable Spaces	8.5	0.3	15	Very important
2	Quality Construction and Detailed Design	8.4	0.3	15	Very important
3	Harmony with Natural and Cultural Environment	8.3	0.4	15	Important and fundamental
4	Adoption of Sustainable and Green Design	8.2	0.4	15	Forward-looking and important
5	Focus on Clear Sightlines and Natural Views	8.2	0.4	15	Important in creating a pleasant atmosphere
6	Continuous and Cohesive Design	8.1	0.4	15	Important for overall coherence
7	Use of Natural and Indigenous Materials	8.0	0.4	15	Connection with the environment and culture

tion to natural views and sightlines significantly influences sensory and aesthetic appreciation. Designing spaces that showcase natural scenery allows visitors to immerse themselves fully, promoting relaxation and mental rejuvenation. Clear, open views act as restorative elements that reduce stress and evoke awe. By framing and highlighting the beauty of nature, architecture can profoundly affect emotional well-being, making the experience memorable and joyful. A cohesive and continuous design across the entire environment is essential. When architectural elements are harmoniously integrated, spaces feel seamless and logical, eliminating confusion or discomfort. Such coherence creates a sense of order and stability, encouraging exploration and positive interactions within the setting. When visitors sense that the environment is thoughtfully designed, their satisfaction increases, reinforcing feelings of delight and contentment.

Lastly, the use of natural and indigenous materials ties the architecture back to its locale in a tangible way. Materials sourced from the surrounding environment evoke sensory pleasure through texture, color, and scent. They support cultural authenticity, making visitors feel more connected to the place. This sense of rootedness and ecological integrity often results in deeper appreciation and emotional attachment, essential for creating spaces that are not only functional but also emotionally uplifting. All these seven factors are intricately linked, forming a holistic framework essential for designing delightful eco-tourism environments. Comfort and quality lay the foundation, while harmony with nature and sustainability add depth and authenticity. Attention to views and materials enrich the sensory experience, and coherent design weaves everything into a harmonious whole. When all are integrated thoughtfully,

Table 6: Factors in explaining the indexes of influencing indexes in the explanation of pleasant components in indigenous architecture up to the tourism complexes

Factor	Cognitive Component	Type of Factor	Qualitative or Quantitative	Description	Method of Assessment
Human and Comfortable Spaces	Feelings of comfort and relaxation in architectural space	Effectiveness	Qualitative	The degree of user comfort and satisfaction in spaces	Questionnaires, Interviews, Direct Observation
Quality Construction and Detailed Design	Standards of construction and precise detailing	Fundamental	Quantitative	Construction quality and detailed design influencing aesthetics	Expert Evaluation, Relevant Analysis
Harmony with Natural and Cultural Environment	Alignment with natural and cultural surroundings	Background	Qualitative	Compatibility of architecture with local environment and culture	Expert Interviews, Sensory Evaluation
Adoption of Sustainable and Green Design	Use of eco-friendly and sustainable design practices	Strategic	Quantitative	Extent of green materials and technologies employed	Document Analysis, Green Criteria Assessment
Focus on Clear Sightlines and Natural Views	Attention to natural views and appropriate sightlines	Practical	Quantitative	Degree of open views and natural scenery integration	Plan Analysis, Visual Evaluation
Continuous and Cohesive Design	Consistency in architectural elements	Structural	Qualitative	Coherence and harmony of design elements	Design Review, Architect Interviews
Use of Natural and Indigenous Materials	Use of local and natural materials	Practical	Quantitative	Percentage and types of locally sourced materials	Material Inspection, Reports

they produce an environment that stimulates positive emotional responses, fosters well-being, and elevates the overall visitor experience. In summary, these factors collectively shift architectural design from merely functional to emotionally resonant, transforming spaces into memorable experiences that celebrate the environment, culture, and human comfort. When architects and planners apply these principles, they create environments that not only satisfy practical needs but also inspire awe, happiness, and a profound sense of connection, ultimately fulfilling the goal of achieving delightfulness in eco-tourism architecture. (Tab. 6)

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