iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 13 **Issue:** XI **Month of publication:** November 2025

DOI: https://doi.org/10.22214/ijraset.2025.75872

www.ijraset.com

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 13 Issue XI Nov 2025- Available at www.ijraset.com

The Bark Bar: Designing a sustainable Forest Integrated Café Using Accoya Wood

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Abstract: ***I studied ten research papers to check if Accoya Wood is the right choice for building The Bark Bar, a forest café near Kerwa Dam in Bhopal. All the studies show that Accoya is no ordinary wood—it's treated with acetylation, which makes it super strong, resistant to rot, and stable even in rain, heat, or damp soil. Long-term tests in Greece and New Zealand proved it can stay decay-free for over ten years, and other papers show it doesn't swell, crack, or warp with seasonal changes. This makes it perfect for outdoor decks, railings, furniture, and even small structural parts like pergolas. It's also eco-friendly and non-toxic, safe to use around trees, and needs very little maintenance while lasting much longer than regular hardwoods. These findings give me full confidence that Accoya is a tough, sustainable, and beautiful material that fits perfectly with a forest café designed to blend with nature and survive Bhopal's weather.***
Keywords: Interior Design, Forest-Integrated Café, Biophilic Design, Sustainable Materials, Accoya Wood, Electrochromic Glass.

I. INTERIOR DESIGN

Interior design is the thoughtful and creative process of shaping interior spaces so they become functional, comfortable, meaningful, and emotionally supportive for the people who use them. It blends artistic vision with technical knowledge, considering layout, materials, lighting, colour, ergonomics, and environmental factors to create spaces that not only look aesthetically pleasing but also work efficiently and feel intuitively right. At its heart, interior design focuses on human behaviour and wellbeing, transforming empty or existing spaces into environments that enhance daily life, reflect identity, and create a harmonious connection between people and the built world.

Some Key Aspects are:

- Color Schemes.
- Space Planning.
- Furniture Selection.
- Lightings.
- Material and Textiles.
- Decorative Items.
- Flooring.

Color theory is very important in interior design language. Color theory is primarily how colors look when placed beside each other, how we combine them to make hues.

Colors are basically divided into three types:

Primary: Red, Blue, Yellow.

Secondary: Green, Orange, Purple (these are created by mixing two primary colors).

Tertiary: These colors are formed the mixing of primary color with secondary, red-orange, blue-green, yellow-purple.

II. ELEMENTS OF DESIGN

The elements of interior design are the fundamental building blocks that shape how a space looks, feels, and functions. These include:

1) Space: The foundation of design, defining openness, boundaries, and how people move and interact within an environment.

2) Line: Horizontal, vertical, and dynamic lines that guide the eye, create structure, and influence spatial energy.

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3) Form: The shapes, volumes, and three-dimensional qualities of furniture, architecture, and décor.
4) Shape: The two-dimensional outline of objects and furnishings that establishes visual identity through curves, angles, and geometric silhouettes.
5) Colour: A powerful emotional tool that influences mood, atmosphere, and visual harmony. 6. Texture: The tactile quality of materials that adds depth, richness, and sensory warmth.
6) Pattern: Repeated motifs or designs that bring rhythm, character, and visual interest to a space. Together, these elements create the sensory and visual identity of an interior.
7) Volume: The perceived mass and spatial density of objects that determines fullness, openness, balance, and the comfort level within a room.

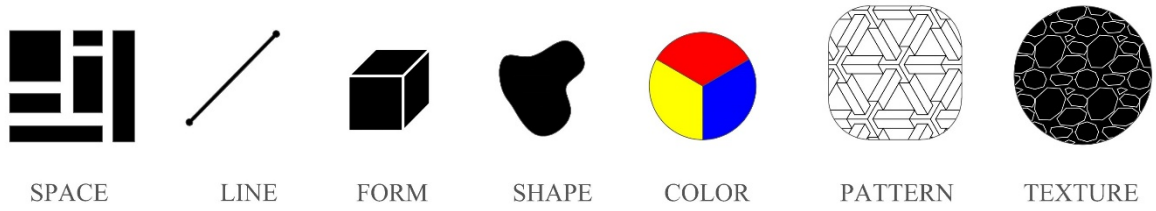


FIG. 1 – The Elements of Design figures are made on AutoCAD.

III. PRINCIPLES OF DESIGN

The principles of interior design are the guidelines that organise the elements into a balanced, harmonious, and meaningful whole. These include:

1) Balance: Creating equilibrium through symmetrical, asymmetrical, or radial arrangements.
2) Harmony & Unity: Ensuring that all elements work together to form a coherent and peaceful environment.
3) Rhythm: Establishing visual flow through repetition, progression, contrast, and transitions.
4) Emphasis: Highlighting key focal points that draw attention and anchor the space.
5) Scale & Proportion: Ensuring objects, furnishings, and architectural features feel visually and functionally appropriate to the space.
6) Contrast: Combining differences in colour, texture, shape, or light to create interest and vibrancy.
7) Movement: Guiding the eye smoothly across the space, creating a natural visual journey from one element to another.

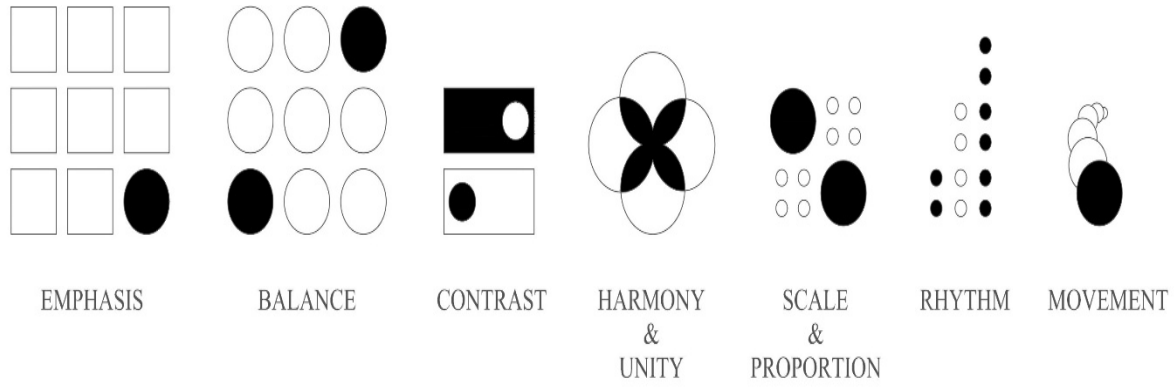


FIG. 2 - The Principles of Design figures are made on AutoCAD.

IV. REVIEW LITERATURE

1) Mantanis, G., Lykidis, C., & Papadopoulos, A. N. (2020) – "Durability of Accoya Wood in Ground Stake Testing after 10 Years of Exposure in Greece" This study investigated the long-term durability of Accoya wood when in ground contact over ten years in Greek climatic conditions. The authors found that Accoya exhibited exceptional resistance to decay, moisture-related damage, and biological degradation, outperforming many conventional timber species. They concluded that acetylation significantly enhances wood longevity, making it suitable for exterior and ground-contact applications.

2) Scion Forest Research Institute (2011) – "Five-Year Field Tests of Modified Wood Performance in New Zealand" Scion researchers carried out five-year outdoor trials to assess modified wood, including Accoya, under New Zealand conditions. Their results showed that Accoya maintained structural integrity, resisted fungal decay, and demonstrated minimal dimensional changes. The study highlighted the wood's stability and its suitability for long-term exterior use in varied climates.
3) TRADA (2016) – "Accoya Cladding: Ten Years of Natural Weathering Performance in Scotland" This report examined the weathering performance of Accoya cladding over ten years in Scotland. Findings indicated that Accoya retained its appearance and structural performance with minimal surface checking or warping, even in challenging wet and temperate conditions. The research supported Accoya's application in façade systems requiring durability and low maintenance.
4) Crawford, D., Hairstans, R., Alexander, J., & Bongers, F. (2024) – "Assessment of the Structural Performance of Accoya® Wood for Glulam Fabrication" This study evaluated Accoya's mechanical and structural properties for use in glue-laminated timber (glulam). The authors reported that Accoya maintained excellent strength, stiffness, and bonding performance, comparable to conventional structural timber. The research highlighted its potential for engineered structural applications in both interior and exterior environments.
5) Springer (2015) – "Performance of Modified Timbers under Service Class 3 Conditions" Springer's work focused on modified timbers, including acetylated wood like Accoya, in high-humidity and outdoor exposure (Service Class 3). The findings showed that Accoya resisted moisture uptake, swelling, and decay, outperforming unmodified timbers. The study emphasized its reliability for exterior construction and humid environments.
6) Papadopoulos, A. N., et al. (2019) – "Dimensional Stability of Acetylated Timber in Varying Humid Climates" This research examined how acetylation affects wood movement in response to humidity changes. The authors found that Accoya showed remarkably low swelling and shrinkage across varying climatic conditions, demonstrating excellent dimensional stability. This makes it ideal for precision applications where stability is critical, such as windows, doors, and façades.
7) Accsys Technologies (2018) – "Accoya Technical Report: Sustainability and FSC Certification" This technical report detailed the sustainability credentials of Accoya, including its environmentally friendly acetylation process and FSC-certified sourcing. The document highlighted Accoya's low environmental impact, long service life, and contribution to sustainable construction, making it a preferred choice for green building projects.
8) 8. Dutch Wetlands Board (2012) – "Case Study: Accoya Decking in Wetland Applications" The study focused on Accoya used for decking in wetland environments. Results showed that the wood resisted rot, insect attack, and extreme moisture conditions for extended periods. The research demonstrated Accoya's suitability for challenging wet applications, including boardwalks, piers, and waterfront structures.
9) Architectural Journal (2020) – "Façade Applications of Accoya in European Heritage and Public Projects" This article explored Accoya's use in heritage and public building façades across Europe. It highlighted its durability, aesthetic longevity, and resistance to weathering, making it suitable for sensitive restoration and architectural projects where long-term performance and low maintenance are essential.
10) WoodSolutions Australia (2018) – "Durability of Modified Timbers: Benchmarking Accoya Against Tropical Hardwoods" This benchmarking study compared Accoya to tropical hardwoods. The authors concluded that Accoya matches or exceeds the durability of many dense hardwoods while being lighter and more dimensionally stable. The research reinforced its use in harsh climates, exterior applications, and sustainable construction where performance and longevity are critical.

V. RESEARCH GAP

Many existing cafés incorporate elements of biophilic design, such as indoor plants, greenery walls, or natural textures. However, these interventions are often superficial and decorative, primarily intended to enhance aesthetics rather than genuinely connecting users with nature. Most contemporary cafés also prioritise digital engagement, with spaces designed for laptops, social media, or work, which limits opportunities for relaxation, mindfulness, and emotional restoration. There is a notable lack of cafés that leverage real natural environments—forests, woodlands, or other immersive green spaces—as a medium to promote mental well-being, social interaction, and stress relief.

This gap highlights a significant opportunity for designing a forest-integrated café that goes beyond visual greenery. Such a café would provide an authentic, immersive nature experience, encouraging visitors to disconnect from digital distractions, engage mindfully with their surroundings, and benefit from the restorative qualities of the natural environment. By addressing this deficiency, the study contributes to both the fields of interior design and wellbeing-focused public spaces.

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VI. PURPOSE

The purpose of this project is to design a café that blends hospitality with silence and nature, offering people a calm escape from urban noise.

The Bark Bar aims to create a space where food, reading, and reflection happen in harmony with the forest, rather than against it. By using Accoya Wood for durable, eco-friendly construction and Electrochromic Glass for natural light control, the café demonstrates how commercial spaces can be sustainable, restorative, and emotionally healing.

VII. OBJECTIVE

1) To create a dining environment that emotionally reconnects people with nature by integrating the café into the forest fabric rather than separating visitors from it.
2) To design a space that promotes digital detox and mindful living, encouraging visitors to slow down, interact with the environment, and experience presence rather than screen dependency.
3) To protect and respect the natural landscape by adopting construction methods and materials that minimise ecological disturbance and preserve existing trees, terrain, and biodiversity.
4) To use sustainable and durable materials — such as Accoya wood and electrochromic glass — that reduce long-term environmental impact while enhancing comfort and adaptability.
5) To provide a sensory-rich user experience where natural light, textures, sounds, and scents contribute to emotional calmness, creativity, and mental well-being.
6) To design functional and comfortable seating, circulation, and service areas without compromising the natural feel or visual harmony of the surroundings.
7) To inspire a shift in lifestyle and design culture by demonstrating how commercial spaces can operate successfully while still prioritising ecology, sustainability, wellness, and human connection.

VIII. AIM

1) To create a café that becomes a natural extension of the forest, where the built environment blends gently with the landscape rather than competing with it.
2) To offer visitors a calming and emotionally nourishing experience, helping them disconnect from digital stress and reconnect with nature, creativity, and real human presence.
3) To demonstrate how commercial spaces can operate sustainably, using eco-friendly materials and low-impact construction methods while still providing comfort, beauty, and functionality.

IX. HYPOTHESIS

1) Visitors will experience a noticeable reduction in stress and mental fatigue when surrounded by a forest-immersive café environment that prioritises calmness, natural light, textures, and sensory warmth.
2) Guests will naturally minimise phone usage and screen time when provided with meaningful nature-based engagement, slow-living spaces, and creative interactions — without enforcing digital restrictions.
3) People will feel emotionally comforted and more connected to themselves and others due to the soothing atmosphere created through biophilic design, natural materials, and non-urban spatial rhythms.

X. LIMITATIONS

1) The café will be designed near MPT Kerwa Resort, Kerwa Dam, Bhopal, M.P.
2) Only AutoCAD and SketchUp will be used for design, visualization, and technical drawings. 3. The project will focus mainly on the interior and immediate exterior architectural envelope, excluding large-scale landscape and civil engineering detailing.
3) The café design is focused on small to mid-scale capacity (not a large commercial restaurant model).
4) This café aspires to give the young generation a temporary escape from screens, allowing them to rediscover the joy of being present with nature.
5) Plumbing and details will not be shown.

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XI. METHODOLOGY

1) Step 1 — Topic Identification

The research journey began with the exploration of multiple problem-solving design themes relevant to modern society. After an initial brainstorming and screening process, two potential topics were shortlisted:

- The Bark Bar – A Forest-Integrated Café.
- The Plant Library — A Reading and Plant Adoption Café. After analysing their relevance, social impact, emotional need, and design feasibility, the first topic was selected because it aligned deeply with the rising concern of increased digital dependency and declining connection with nature among young people.

2) Step 2 — Synopsis Development

A detailed synopsis was then prepared to set the academic foundation of the research. It included:

- Introduction
- Review of Literature
- Research Gap
- Purpose
- Aim
- Objectives
- Limitations
- Conclusion

This synopsis helped in clarifying the direction of the study and ensured that every stage of research stayed aligned with the project's core intent.

3) Step 3 — In-Depth Theoretical Research

After finalising the topic — "The Bark Bar – A Forest-Integrated Café" — an extensive study of biophilic architecture, healing environments, sensory psychology, sustainable materials, and café design typologies was conducted. This step was crucial to build conceptual clarity and understand how a café can become a healing space rather than just a commercial space for dining.

4) Step 4 — Live Case Studies To gain practical insights beyond theoretical research, two live case studies were conducted in Bhopal.

XII. CONCEPT & DESIGN

Concept — "Layers of the Forest Bark"

The concept of The Bark Bar is inspired by the natural function of tree bark — a protective layer that keeps the tree safe while supporting life around it. In the same way, the café is designed to create a feeling of comfort and emotional safety for visitors who often deal with noise, rush and overstimulation in daily life. The space is planned to make people slow down, breathe and mentally reset, offering a café experience that is calm and nature-connected rather than crowded or commercial.

Just like bark has layers, the café is organized as a gradual movement from openness to emotional comfort. Guests enter through an indoor waiting area, then transition into the main dining space, and finally connect with deeper nature experiences outdoors — including a gazebo with a firepit for cozy night gatherings and a small stage for soft musical performances. Natural materials reinforce this story: warm Accoya wood expresses the texture of bark, Electrochromic glass keeps the forest views visible while controlling light, and earth-toned concrete anchors the space lightly into the land. Through these elements, the café blends with the forest and becomes a soothing environment where architecture supports peace rather than noise.

XIII. MATERIALS USED

Flooring – Engineered Wooden Planks. Ceiling - Exposed wooden rafter ceiling with truss framework. Construction – Steel Frame Structure, Accoya Wood, Electrochromic Glass. Suspended Lighting.

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XIV. MOOD BOARD

















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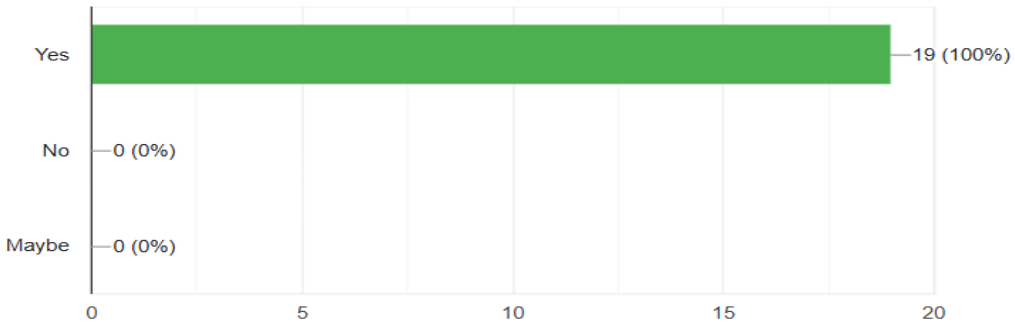
XV. RESULT & DISCUSSION

Here is the data collected from the customers/public/youth about Forest-Integrated Café.

Would you be interested in visiting a silent, nature-based café in a forest setting?

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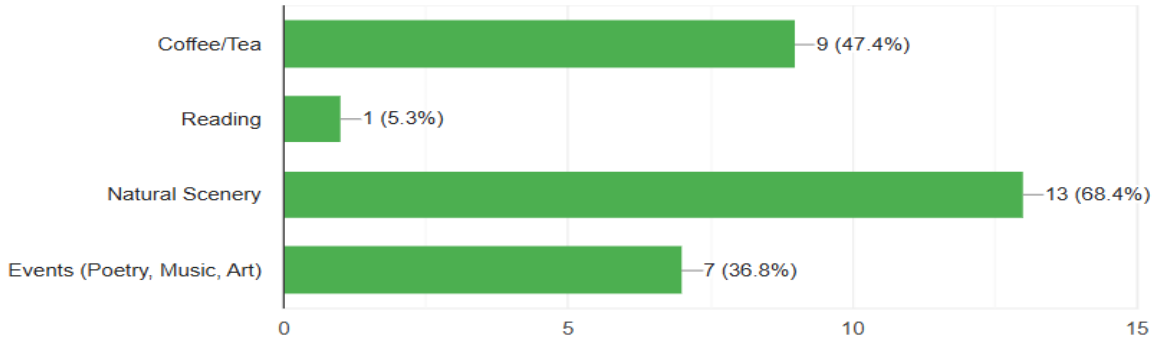
19 responses



What would you primarily come here for?

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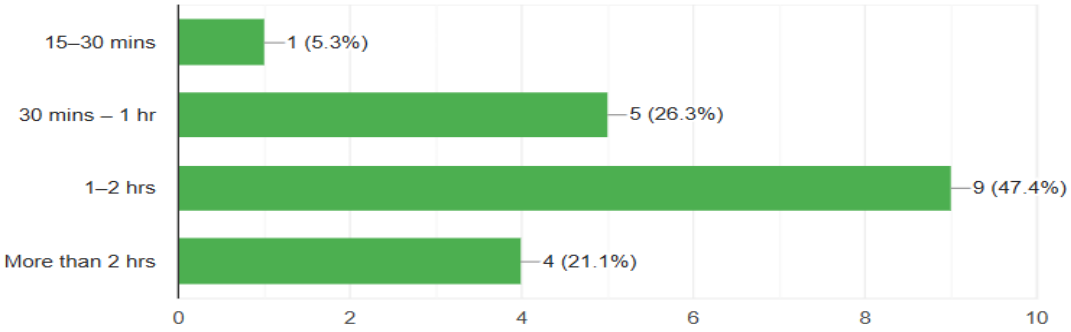
19 responses



How long would you typically spend in such a café?

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19 responses

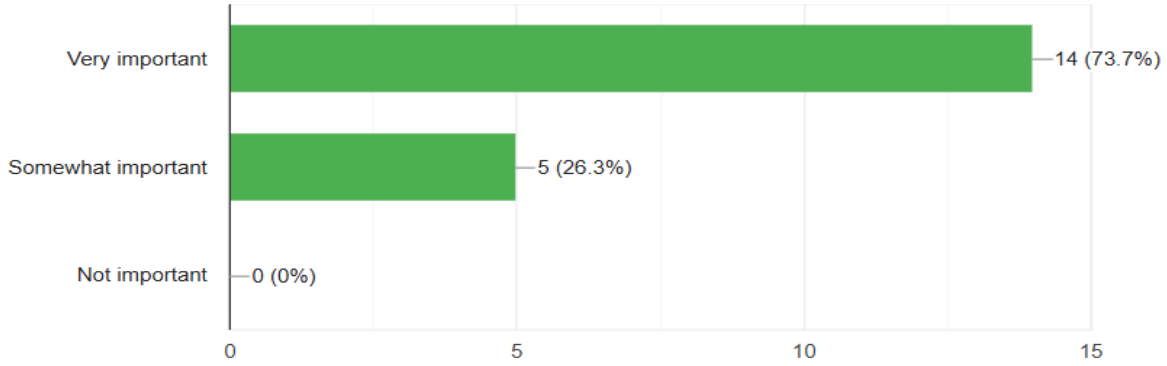


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How important is **visual connection with nature** for you in a café?

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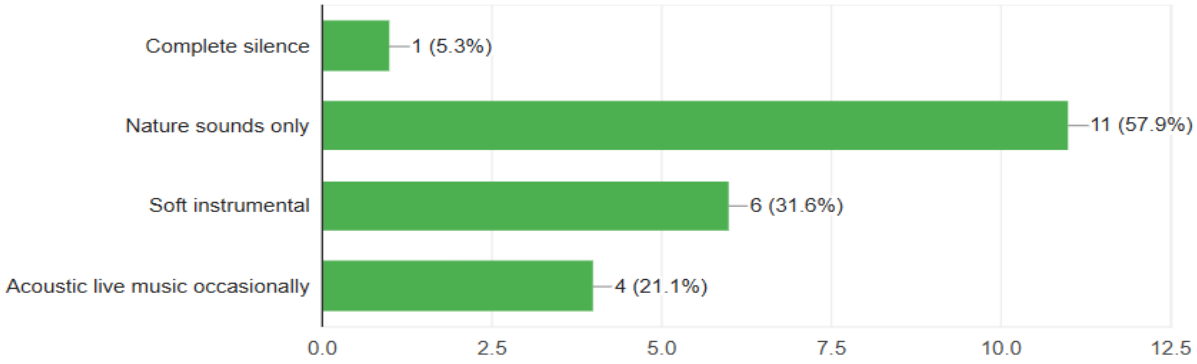
19 responses



Would you prefer silence or soft music?

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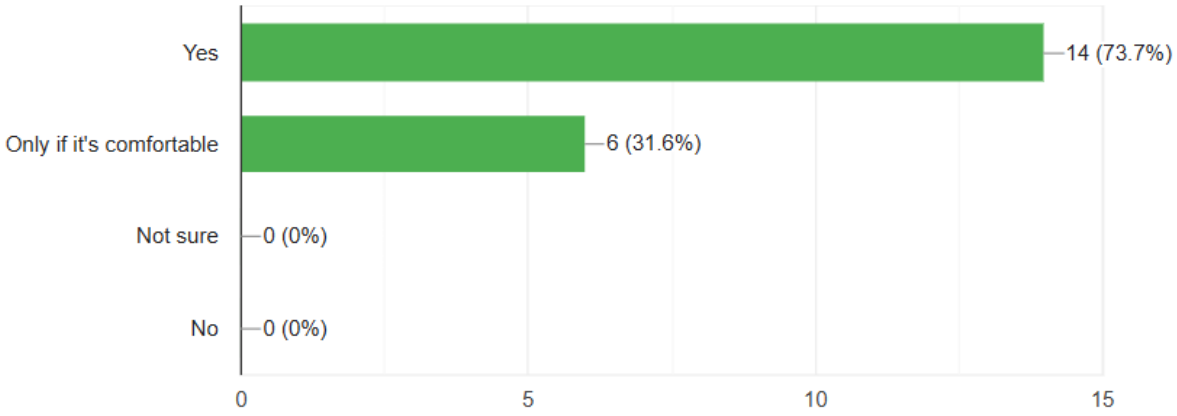
19 responses



Do you support eco-friendly design in hospitality spaces?

Copy chart

19 responses

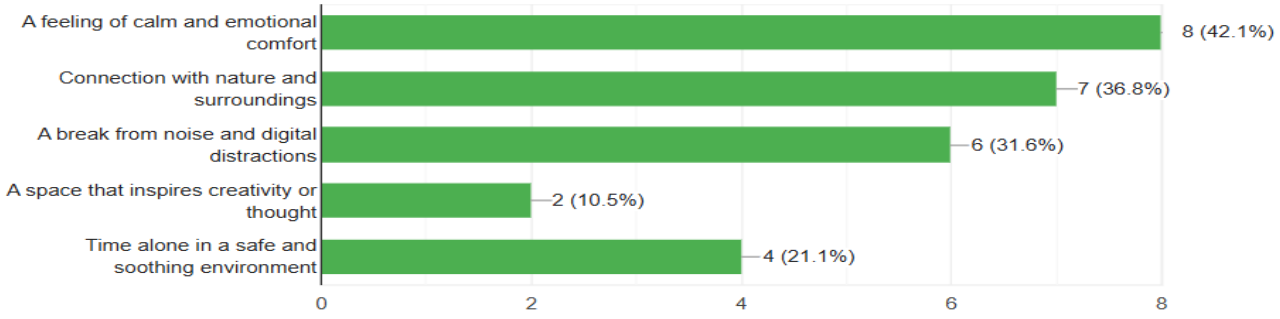


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What do you seek most in a peaceful café experience?
(Choose the one that matters most to you)

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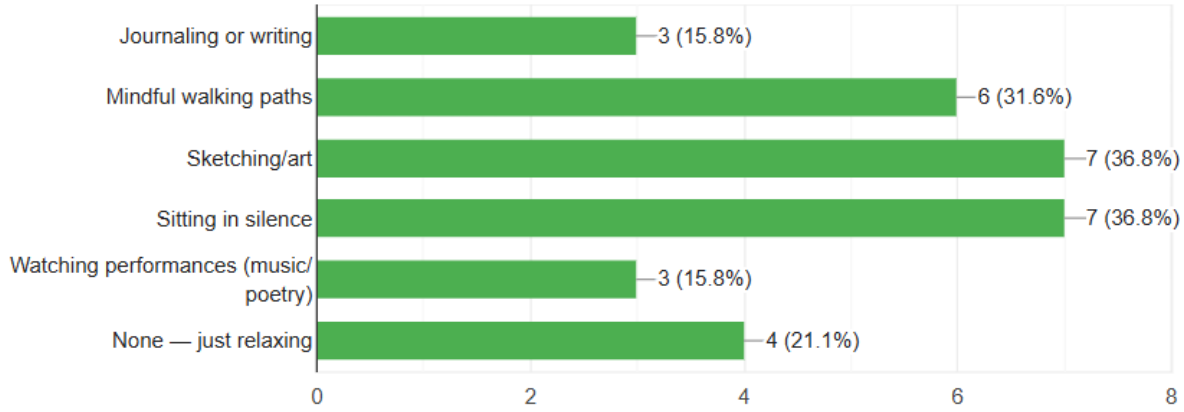
19 responses



What kind of activities would you enjoy during your visit to a forest café?
(Choose the one that matters most to you)

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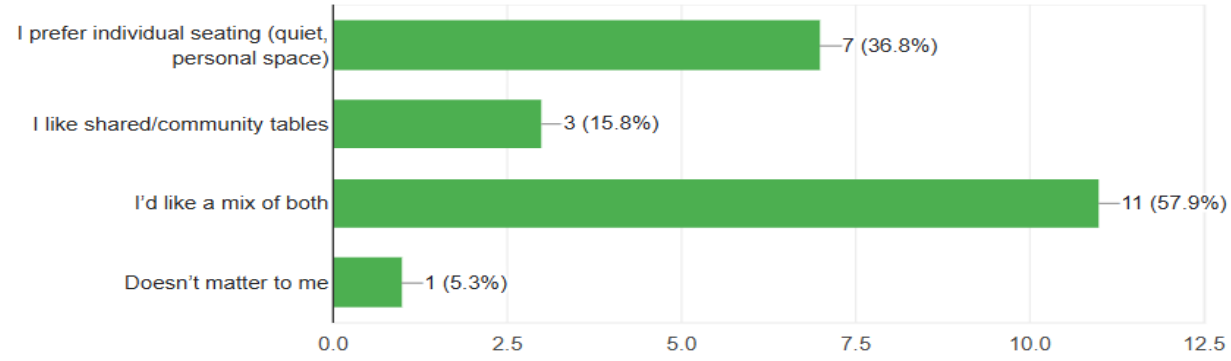
19 responses



Would you prefer individual spaces or shared seating areas?

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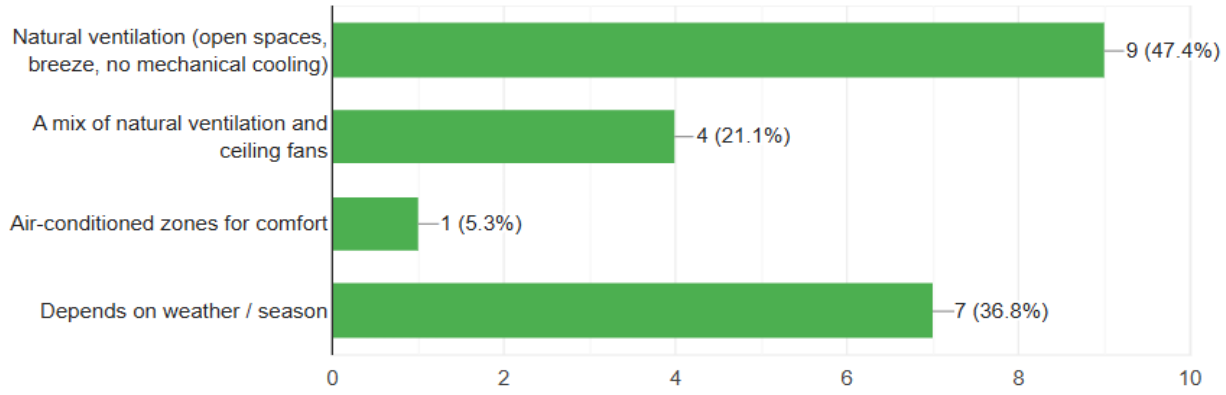
19 responses



What kind of ventilation would you prefer in a forest café?

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19 responses



In a nature-based café, what kind of experience would make you want to return?

19 responses

- Connection with the nature
- The fresh environment
- A calm safe and a soothing environment
- A feeling of calm and Connection with nature .
- Fun activities to do when I am there which makes me close to nature.
- A nice peaceful and silent space
- Peace
- Yes

In a nature-based café, what kind of experience would make you want to return?

19 responses

- A calming atmosphere with natural decor, fresh air, and organic food that feels nourishing and unique plus friendly service and a peaceful vibe that helps me unwind.
- Relaxed
- The calm environment and the silence
- Good hospitality and services.
- Natural/vintage ambience
- A space where nature isn't just décor — it's felt. Soft earthy textures, calming greens, sunlight filtering through plants, the sound of water... if the café feels like a retreat, I'd return without a second thought.
- Open air space
- The cozy environment of cafe and connection with nature experience can make me visit it again

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A peaceful, cozy atmosphere with fresh air, natural sounds, and organic food made with love.

It's emotional comfort and peaceful nature

I would like to maintain the peace and dignity of the place as well of others sitting over their

What is one thing you dislike about regular urban cafés that you would want to avoid in a forest café?

19 responses

Artificial air and less of natural ventilation

They are good too

Everyone should be welcomed

Noise and overcrowding, which often disrupt the relaxing .

To much chaos and enclosed and small spaces.

No personal space nd noises

Crowd

Yes

Noise and crowding. I'd want the forest café to stay quiet, serene, and uncrowded.

What is one thing you dislike about regular urban cafés that you would want to avoid in a forest café?

19 responses

crowd of people

Over crowd and noise

Nothing

- seating patterns
- openness/ ventilation
- separate areas for alcoholic ones

The artificial vibe — harsh lighting, cramped seating, and noise. In a forest café, I'd avoid anything that breaks the calm, natural flow of the space.

Unnecessary loud music and lighting

Air conditioning cafes

I'd prefer calm, soft ambiance in a forest café.

Avoiding vehicles transport

UnHygiene and noicee

How do you personally define a "healing" or "refreshing" space?

19 responses

Healing

Which gives you mental peace and calmness wherein you totally forget all your worries by spending time in nature.

A calm and silent space can be healing

No rush!!

Environment that helps feel safe, calm, and reconnected with yourself ,where your mind can breathe, and your emotions are allowed to just be without judgment.

When our mind is not listening to the voice inside our head.

That gives warmth to our body

Near to nature

How do you personally define a "healing" or "refreshing" space?

19 responses

A quiet, natural place with fresh air, soothing sounds, and calming colors that helps me relax and feel recharged.

Some thing which my inner child Live

Calming ambiance (nature sound, soothing colors)

Peace of mind

Using below elements can create a refreshing space:
Wood
Plants
Fire place
Double height ceiling
Vintage vibes

A healing space lets me forget time exists — soft cushions, plants, and quiet corners.

Natural light, green plants and water features.

Something that can give my mind calmness and makes me feel comfortable

A place that feels calm, close to nature, with soothing colors, gentle sounds, and no rush.

A healing or refreshing space is one that feels safe where your mind and body can fully exhale.

If you could suggest one unique feature for this café, what would it be?

19 responses

Dilapidated items such as old vintage furniture etc.can be kept so as to evoke a sense of nostalgia, history, or a specific era, contributing to the cafe's overall theme and personality. Such unique and antique items can make your cafe stand out from the competition.

Hanging plants

Make it a universally friendly space that welcome everyone

Living furniture.

Swing near waterfall and meditation healthcare center in nature.

You can use natural material like stones nd wood fir interior decore and can create green roof or rooftop for natural theme or can create natural sounds of birds or etc....

Tree house kinda cafe

If you could suggest one unique feature for this café, what would it be?

19 responses

Yes

Treehouse seating nestled among the branches for a peaceful, elevated dining experience or
A natural spring or small waterfall nearby, creating soothing sounds and a serene atmosphere.

A colourful flower farming or garden

You can add some pottery feature and can also create a cozy outdoor seating area with a fire pit, perfect for evenings and star gazing.

Skylights.

Hexagonal or Octagonal shape of the cafe with large windows.

Open-air floor seating with cushions, indoor waterfall or stream, pet-friendly chill zone.

Water fountain with seating

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Perfect sitting Area for bonfire

A mindful corner designed like a cozy treehouse or glass dome nestled among trees where guests can sit on swings or floor cushions, sip herbal tea, draw sketch or just listen to nature sounds. No WiFi, no rush just pure connection with self and surroundings.

A cozy hammock lounge where people can relax and enjoy their coffee while gently swinging above the ground, surrounded by trees or city views.

Eco-friendly

XVI. SURVEY CONCLUSION

The survey strongly confirms that people are highly drawn to the idea of a silent, forest-integrated café. All respondents (100%) expressed interest, showing that users are seeking more than just coffee—they want peace, emotional comfort, and a deep connection with nature. Most participants said they would spend one to two hours in such a space, indicating a preference for slow, mindful experiences instead of quick visits.

Nature emerged as the biggest attraction. A majority highlighted natural scenery as their main reason to visit, along with creative and reflective activities like sketching, journaling, and mindful walking. Respondents also emphasised the importance of clear outdoor views, natural materials, soft ambience, and eco-friendly design choices. Sound preferences further point to a calm atmosphere centred around nature sounds and gentle music.

Overall, the survey reinforces the need for a serene, nature-immersive café that supports mental well-being, creativity, and conscious disconnection from digital stress. These insights give clear direction for the project—design a space that feels safe, calming, sustainable, and deeply rooted in the forest environment while offering an experience that regular cafés do not provide.

XVII. CONCLUSION

This project set out to explore how a café could become more than a commercial venue—how it could transform into a space for healing, reflection, and meaningful connection with nature. *The Bark Bar* is the result of that exploration: a forest-integrated café designed to offer quietude, emotional comfort, and a deep sense of belonging to the natural world.

The user survey played a crucial role in shaping the direction of the design. Participants overwhelmingly expressed the need for calm environments, natural scenery, silence or soft nature sounds, and spaces that reduce digital and urban noise. These insights confirmed that people are actively seeking places that help them slow down, think clearly, and reconnect with themselves. This café responds to that need directly and intentionally.

The design approach embraces Accoya wood, electrochromic glass, and a warm, earthy palette to create a structure that blends into the forest rather than imposing on it. The architecture respects the land with minimal intervention, elevated forms, and materials that age beautifully with time. The interiors extend this philosophy—natural textures, soft lighting, and organic spatial flow encourage visitors to unwind, read, create, or simply sit in silence surrounded by nature.

Above all, the project highlights how thoughtful design can support emotional wellness. By prioritizing sensory comfort, natural integration, and sustainability, *The Bark Bar* becomes a retreat rather than a typical café. It offers an experience rooted in peace—where visitors can disconnect from chaos and reconnect with themselves through the forest.

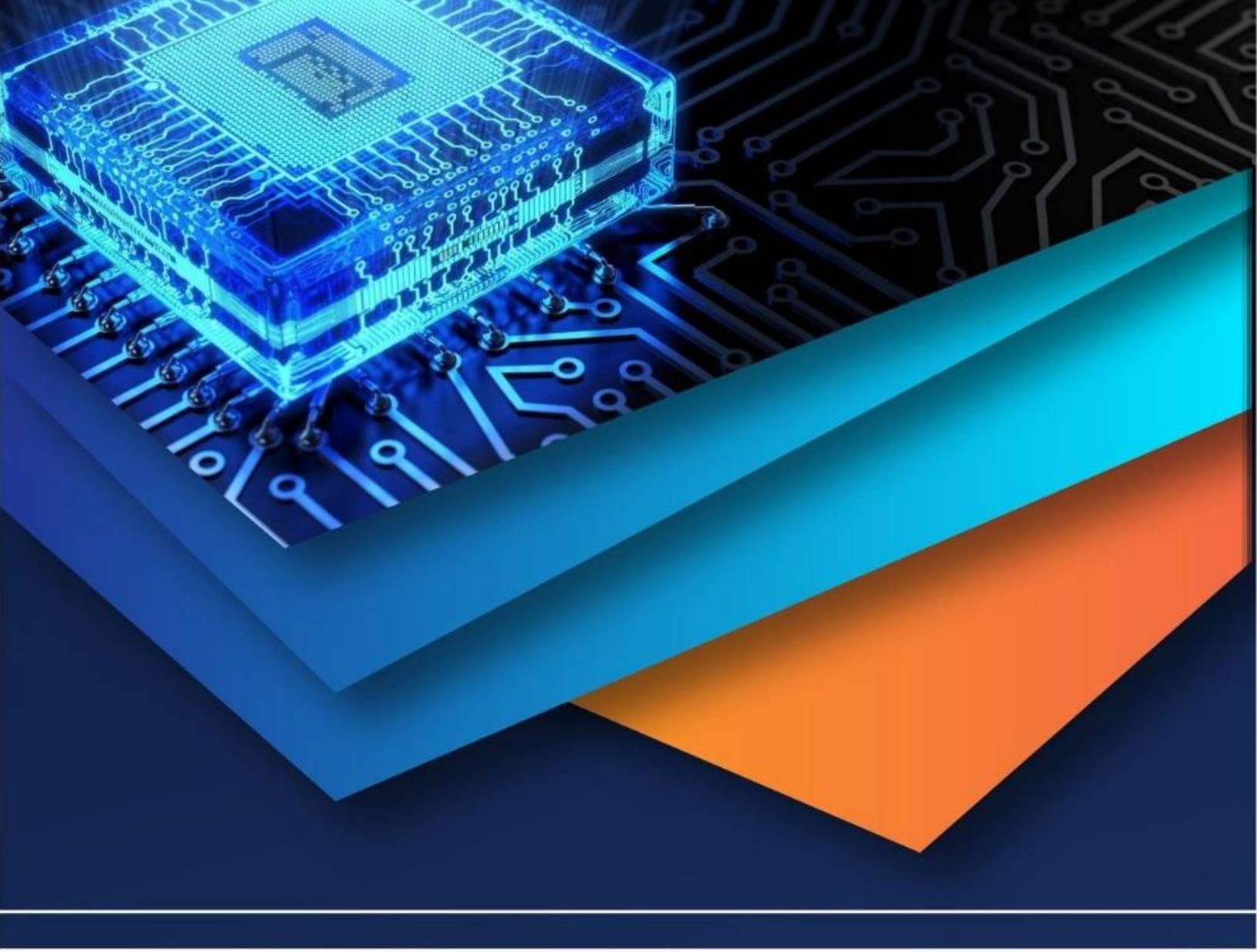
In conclusion, this project demonstrates the powerful role interior design can play in fostering mindfulness and well-being. *The Bark Bar* stands as a gentle, nature-driven alternative to conventional hospitality spaces, proving that when design listens to human needs and honors the environment, it can create places that truly heal. This café is not just a destination—it is a restorative escape, shaped by nature and designed for the quiet moments people seek today.

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