

HOSPITIUM

Research and Innovation- Volume 7, Issue 1

A Publication on Hospitality and Tourism by the
Faculty of Hospitality Management and Catering Technology

Cover Story:

Technological Waves in Maritime Tourism : A
Bibliometric Review and Directions for Future Research



RAMAIAH
UNIVERSITY
OF APPLIED SCIENCES

FACULTY OF HOSPITALITY
MANAGEMENT & CATERING
TECHNOLOGY



HOSPITIUM

“The ancient Greco-Roman concept of hospitality,
A divine right of the guest and a divine duty of the host.”

Volume 7, Issue 1, July 2025

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Hospitium: Published by the-
Faculty of Hospitality Management and Catering Technology,
M S Ramaiah University of Applied Sciences, Gnanagangothri Campus,
New BEL Road, MSR Nagar, Bangalore, Karnataka, India 560054

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FOREWORD



Professor Abby Mathew

Dean of Faculty of Hospitality Management and
Catering Technology (FHMCT) MSRUEAS, Bengaluru

Dear Readers,

It gives me immense pleasure to present Hospitium Symposium Magazine, Volume 7, Issue 1. It is a distinguished platform showcasing the academic and research contributions of our budding professionals in the field of Hospitality Management.

This edition is a testament to the spirit of innovation and academic excellence nurtured within our institution and by students from other colleges in India and abroad, presented during the Hospitium Symposium-2025. The students' commitment to research, critical thinking, and real-world problem-solving reflects not only their growing expertise but also their passion for the hospitality and tourism industry.

Each article in this volume brings forth unique perspectives and insightful findings, addressing contemporary challenges and emerging trends across diverse domains such as culinary innovation, sustainable tourism, digital transformation, and hospitality development. These scholarly efforts underscore the vital role of student research in advancing the frontiers of knowledge and contributing meaningfully to industry practice.

I extend my heartfelt congratulations to all student contributors, faculty mentors, and the editorial team for their dedication and hard work in bringing this issue to life. I am confident that this publication will inspire its readers and continue to foster a culture of research and academic pursuit among our students.

May this volume serve as a stepping stone for many more intellectual endeavours.

FROM THE *Editor-in-Chief's* DESK



Dr. Sweety Jamgade

Editor-in-Chief

HoD-Management Studies,
Associate Professor, FHMCT, MSRUEAS, Bangalore

Dear Hospitium Family (Authors, Readers and Editorial Board Members),

It is with great enthusiasm I present to you Volume 7, Issue 1 of the Hospitium Symposium Magazine, a special edition dedicated to the research papers and scholarly articles submitted by our hospitality management students during the Hospitium Symposium – 2025.

This annual symposium has grown into a vibrant platform for young minds to explore, question, and contribute to the ever-evolving world of hospitality. The selected articles in this issue reflect a wide range of contemporary themes ranging from hospitality and tourism development to sustainable practices, food innovation to emerging trends in the sector.

What makes this volume particularly special is the authenticity and research evident in every piece. These contributions not only highlight academic rigor and research competence but also demonstrate our students' commitment to understanding the industry at a deeper level. Their voices offer fresh perspectives and innovative solutions that resonate with both academic and industry relevance.

I would like to express my sincere gratitude to all the contributors, faculty guides, reviewers, and the editorial team Dr. Renju, Mr. Soumalya Barua and Ms. Chaithanya Shabu for their collective effort in bringing this publication to fruition. Their dedication ensures that Hospitium Symposium Magazine continues to be a beacon of knowledge and inspiration for all.

As you turn the pages, I hope you find valuable insights, thoughtful reflections, and a renewed appreciation for the dynamic world of hospitality.

Keep reading and widen your horizons!

Stay safe and healthy!

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TECHNOLOGICAL WAVES IN Maritime Tourism

A Bibliometric Review and Directions for Future Research

-Md. Tariqul Islam, Neethiahnathan Ari Ragavan and Jeetesh Kumar,
Taylor's University, Selangor, Malaysia

Abstract

The integration of technology into maritime tourism has significantly reshaped the dynamics of the sectors, which encompass cruise tourism, marine experiences, and coastal zone management. "This study aims to conduct a comprehensive bibliometric review of 192 academic publications on technological innovation in maritime tourism, published from 2003 to 2025. Bibliometrix R Package and VOS viewer software were utilised to conduct the performance analysis and science mapping. The result reveals a significant growth in research on maritime tourism technology since 2020. Key performance indicators highlight leading contributions from specific journals, authors, and countries. Science mapping techniques identified dominant themes such as sustainable development, smart tourism, cruise tourism, and

the integration of advanced digital technologies like AI and big data. The findings also highlight the emergence of blockchain, real-time monitoring systems, and local technology adoption in coastal communities. This study provides several theoretical and practical implications. Theoretically, it consolidates fragmented literature and provides a structured understanding of the evolution of the domain. It also explicitly sets a robust agenda for future research in nascent technological domains. Practically, it guides industry stakeholders and policymakers in prioritising investments in key technologies for the rapidly transforming maritime tourism sector.

Keywords: *Maritime Tourism, Technology in Tourism, Smart Tourism, Digital Innovation, Bibliometric Analysis*



Introduction

The maritime tourism sector has undergone a rapid transformation over the past few decades. This is due to the integration of technology across the various segments of maritime tourism (e.g., cruise tourism, marine recreation, and coastal tourism development). The maritime tourism industry has been experiencing a transformation from artificial intelligence to virtual reality (Armoo, A. K., et al., 2020). The technological innovations reshape both tourists' experience with maritime destinations and also redefine the stakeholders' plan, manage, and sustain these environments (Socratous M., et al., 2025). The adoption of smart and digital tools has become a strategic necessity in an increasingly competitive and sustainability-driven tourism context.

Maritime tourism is an important segment of coastal and marine economies (Karani, P., & Failer, P. 2020). It contributes substantially to the local and global economic growth. The emergence of concepts such as blue economy and smart tourism ecosystems highlights the importance of technological integration. It enhances operational efficiency, environmental stewardship, and visitor satisfaction.

Several innovative technologies (e.g., big data analytics, GPS tracking, decision support systems, and immersive media) have increasingly become integral in maritime tourism [4]. It supports real-time decision-making, enriches tourist experiences, and promotes sustainable destination management practices.

There is a growing interest among scholars in technological innovation in the maritime tourism research domain (Buhalis, D., et al., 2022; Durlik, I., et al., 2023). However, the scholarly landscape on this domain remains fragmented. There is a limited synthesis of research patterns, thematic trends, and geographical distributions. A coherent understanding of how technologies are being conceptualized, adopted, and evaluated in maritime tourism has yet to be identified. Therefore, a comprehensive bibliometric analysis is necessary to map the intellectual structure of the field and identify underexplored research areas.



This study aims to address these knowledge gaps by conducting a systematic bibliometric review of 192 academic publications. This study utilised the Bibliometrix R Package and VOSviewer to conduct the bibliometric analysis. This study illustrates the developmental trajectory of technology-driven maritime tourism research. Moreover, it will provide insights into emerging themes and future research directions through this bibliometric approach. By reviewing the existing literature, this study contributes to guiding academics, practitioners, and policymakers toward a more innovative and sustainable maritime tourism sector.

Literature Review

Defining Maritime Tourism

Maritime tourism is an important segment of the broader tourism industry. It encompasses travel and recreational activities that are directly linked to the ocean and coastal environments. Maritime tourism includes cruise tourism, yachting, recreational boating, marine wildlife observation, coastal excursions, and underwater tourism. Maritime tourism can be defined as the integration of both natural marine resources and built infrastructure to create leisure and travel experiences within a coastal and oceanic context.



Previous scholars have acknowledged the economic and social contributions of maritime tourism. Cruise tourism has evolved into a multi-billion-dollar industry and a key driver of coastal urban development (Pioch J., 2022). However, the expansion of maritime tourism also brings several challenges (e.g., environmental degradation, resource overuse, and socio-cultural impacts on local communities). Therefore, managing maritime tourism requires a balance between economic development, environmental preservation, and technological innovation.

Smart Technology in Maritime Tourism

The concept of smart tourism is derived from smart city frameworks. It highlights the use of interconnected digital technologies to improve tourist experiences, operational efficiency, and destination sustainability (Mandic A., & Pranicevic, D., 2019). Smart tourism applications in maritime tourism are increasingly integrated into cruise ships, coastal resorts, and marine parks. For example, smart cruise ships are equipped with AI-based personal assistants, facial recognition boarding systems, wearable tech for navigation, and real-time service feedback tools (Dogan S., & Niyet I 2024).



Smart technologies (e.g., geospatial mapping, sensor networks, and mobile-based reporting systems) in coastal management are deployed to monitor coastal erosion, marine biodiversity, and tourist flows (Girau R., et al., 2019). These systems allow for data-driven policy planning, hazard mitigation, and visitor behaviour management. Digital dashboards supported by several innovative applications, such as cloud computing and IoT, provide stakeholders with real-time insights into tourism impacts and resource conditions.

Methodology

Data Source

The data employed in the present study were derived from the Scopus database. The Scopus database was chosen for this study due to its comprehensive range of journal and publication coverage.

Data Search Strategy

The PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)

framework was adapted from Page et al. (2021) in the present study. This approach guides the identification, screening, eligibility, and inclusion of relevant literature.

Identification and Screening: The primary search query was designed to identify a comprehensive range of publications on technological innovation in maritime tourism. A total of 369 documents were identified. The initial screening strategy was conducted using specific criteria that focused on document type, publication stage, source type, and language. Only the journal and review articles published in journals and the publication stage were in the final stage. Documents published in the English language were included in this study. A total of 203 documents were taken for further eligibility checks.

Eligibility and Inclusion: All 203 documents were screened manually through an extensive review of the title, abstract, and keywords for the eligibility assessment. After all assessments, a total of 192 documents were taken for further analysis.

Data Analysis Tools and Techniques

Bibliometric analysis is a statistical approach used to quantitatively assess academic literature, providing insights into global research trends within a specific field. Various software tools are available to facilitate bibliometric analysis. However, this study employed the Bibliometrix R package and VOSviewer software. The outcomes of the bibliometric investigation were categorised and presented through performance analysis and science mapping.

Results and Discussions

The result of the bibliometric analysis is structured into two sections, named performance analysis and science mapping, to emphasize the intellectual landscape of technological integration in maritime tourism research.

Performance Analysis

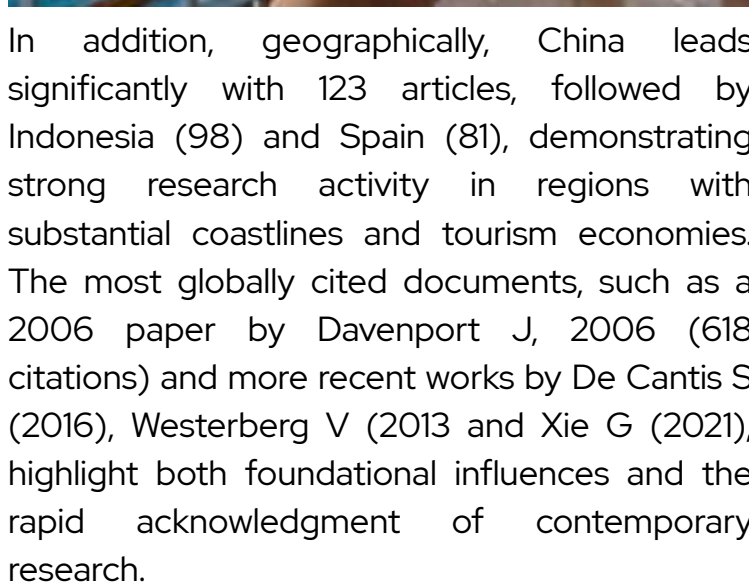
The performance analysis provides insights into the growth, impact, and key contributors within the field of "Technological Waves in Maritime Tourism" from 2003 to 2025.



Research output was initially low in the early 2000s, demonstrated moderate growth between 2011 and 2018, before experiencing a notable surge since 2020, peaking with 33 articles in 2020. This trend underscores a rapidly expanding interest and focuses on the intersection of technology and maritime tourism.

Additionally, leading journals in this domain include the Journal of Coastal Research (15 articles) and Sustainability (Switzerland) (11 articles), indicating a strong emphasis on coastal dimensions and environmental considerations. Other relevant outlets like Ocean and Coastal Management, Frontiers in Marine Science, and Tourism Management highlight the multidisciplinary nature of the research.

While contributions are broadly distributed, "De Cantis, Stefano" and "Ferrante, Mauro" emerge as the most prolific authors, each with four articles. Prominent affiliations include IPB University (Indonesia), Research Center for Environment and Clean Technology and Universitat Rovira I Virgili (Spain).



Science Mapping

Science mapping visualizes the conceptual structure of the field, revealing thematic clusters, popular keywords, and emerging trends.

The keyword co-occurrence analysis and word cloud visualisation highlighted a concentration of technological terms, notably "smart tourism," "big data," "GIS," "remote sensing," "digital innovation," "cruise tourism," and "sustainability" (see Figure).. These keywords reflect a growing convergence in research around data-driven decision-making, smart infrastructure, environmental monitoring, and the digital transformation of maritime and coastal tourism.

The evolution of research themes over time reveals a significant transition from broad topics like "tourist destination" and "coastal zone management" to more advanced and specific technological themes. For example, "cruise tourism" and "big data" emerged prominently around 2020 and have shown sustained interest. More recent entries, such as "blue economy" (2024), "renewable energy" (2023), and "stakeholder (digital governance)" (2024), indicate a growing orientation toward sustainable and participatory digital governance. These trends suggest a shift in academic inquiry toward smart systems, predictive analytics, and eco-conscious management frameworks within tourism and maritime contexts.

Although some clustering data were incomplete, thematic analysis inferred from keyword patterns and temporal distribution identified four key theme types: motor themes include "smart cruise tourism", "big data", "AI-based systems", and "GIS for planning", representing

central, well-developed areas. Basic themes involve "remote sensing," "marine environmental monitoring," and "sustainability tools." Niche themes such as "IoT in cruise logistics" and "mobile travel platforms" highlight specialised research interests. Emerging themes include "blockchain for coastal asset tracking" and "immersive AR/VR in tourism," pointing to new frontiers that redefine how technology supports the sustainability and innovation agenda in maritime tourism.

Research Gaps Identification and Future Research Directions

The analysis of existing literature reveals several key research gaps in maritime tourism technology (see Table). First, while digital technologies like blockchain show promise for enhancing security, transparency, and logistics, their application in marine tourism remains limited and warrants further exploration.

Second, there is a notable lack of real-time monitoring and predictive analytics systems that leverage IoT and AI to support dynamic coastal and tourism management. Third, local adoption of digital tools by coastal communities is underexplored, especially regarding their socio-economic impacts and role in cultural preservation. Fourth, the interaction between tourists and emerging immersive technologies such as AR and VR requires deeper investigation to optimise experience design and engagement.

Finally, governance frameworks and ethical considerations related to the use of smart technologies and big data in maritime tourism are insufficiently addressed, highlighting the need for responsible policy development. Addressing these gaps can drive more effective, sustainable, and equitable digital innovation in the sector.

Table: Identified Research Gaps and Future Research Directions

Research Area	Gap Identified	Potential Focus
1. Digital Tech Adoption	Blockchain use in maritime tourism is limited.	Blockchain for security, transparency, and logistics.
2. Real-Time Monitoring	Lack of real-time, predictive systems.	IoT/AI for monitoring and forecasting tourist flows.
3. Community Tech Use	Local adoption in coastal areas is underexplored.	Community tech uptake, socio-economic impact.
4. Tech & Tourist Experience	Tourist-tech interaction needs deeper study.	AR/VR effects, design of smart tourism services.
5. Governance & Ethics	Smart tech regulation and ethics are unclear.	Policy, governance models, and data ethics in tourism.

Implications of the Study

The bibliometric review provides several theoretical and practical insights into the growing role of technology in maritime tourism. Theoretically, it consolidates fragmented research from 2003 to 2025, which provides a comprehensive overview that moves beyond isolated studies to reveal how digital innovations have reshaped cruise tourism, marine experiences, and coastal management. By mapping key authors, journals, and thematic clusters, this study highlights the intellectual structure and evolving priorities within the field. It identifies emerging research domains like blockchain applications, real-time monitoring, and local technology adoption, which open new avenues for theoretical exploration around transparency, data governance, and community integration.

Additionally, the findings emphasize the interdisciplinary nature of maritime tourism research, urging future studies to integrate perspectives from tourism management, environmental science, and computer science.

From a practical perspective, the study guides industry stakeholders and policymakers on strategic technology investments, emphasising smart technologies like AI, VR, big data, and GIS as vital for innovation and competitiveness. It underscores the importance of integrating sustainability and blue economy principles through real-time environmental monitoring and responsible resource management. The research also stresses enhancing tourist experiences via digital tools that personalise services and improve destination management. Policymakers are encouraged to develop inclusive digital policies that support coastal communities and establish robust data governance frameworks to address privacy and ethical concerns. Finally, the analysis identifies key collaboration opportunities among academics, industry, and institutions, fostering interdisciplinary partnerships that can effectively address technological and sustainability challenges in maritime tourism.

Conclusions

This study systematically mapped the evolving intersection of technology and maritime tourism. The analysis revealed a field experiencing significant growth, driven by increasing scholarly interest in smart technologies, sustainability, and cruise tourism. Key themes identified include the integration of AI, VR, and big data to enhance tourist experiences and optimise destination management, alongside a strong emphasis on environmental considerations and the blue economy. Crucially, the study highlighted underexplored areas such as blockchain, real-time monitoring systems, and the nuanced role of local technology adoption in coastal communities. These findings not only provide a consolidated theoretical foundation for future research but also offer practical guidance for

industry stakeholders and policymakers to strategically invest in technological advancements for sustainable and innovative maritime tourism development.

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Development of Percept-X

An Immersive Equipment/Hardware to Promote and Market Hotel and Tourism Business

-Philip T Joseph, Soumalya Barua, Ujwal P, Bhavana Siddeswera, and Dr. Sweety Jamgade, Faculty of Hospitality Management and Catering Technology (FHMCT), MSRUEAS, Bengaluru



Abstract

The tourism and hospitality industry thrives on delivering emotional and memorable experiences. However, traditional marketing tools such as brochures and videos often fail to offer the depth of sensory engagement expected by modern travellers. Although immersive technologies like Augmented Reality (AR) and Virtual Reality (VR) present innovative solutions, their excessive costs, ethical limitations, and privacy concerns restrict widespread adoption. To address these challenges, Percept-X was developed as a cost-effective, hardware-based experiential setup aimed at promoting hotel and tourism businesses through a multi-sensory, immersive environment. The system eliminates the need for headsets or complex digital infrastructure.

It integrates printed visuals, synchronized surround audio, and controlled scent diffusion to create a walk-through space that stimulates sight, sound, and smell. An experimental study employing quantitative methods was conducted to evaluate the effectiveness of the prototype.

Three key hypotheses were tested using T-tests: the influence of the setup on customer interest and decision-making, its role in enhancing immersion and memorability, and its ability to alleviate privacy concerns in comparison to conventional AR/VR systems.

Findings confirmed that the immersive setup significantly boosts customer engagement, improves memorability of the experience, and reduces concerns related to data privacy due to its non-intrusive design. The results demonstrate the potential of strategically

designed low-cost, multi-sensory experiences in redefining immersive marketing practices in a sustainable and inclusive manner.

Keywords: *Multi-sensory immersive marketing, Tourism and Hospitality Business, Privacy and Ethical concerns, Percept-X, Simulated experience, Walk-through environment*

Introduction

Augmented Reality (AR) and Virtual Reality (VR) have revolutionized global tourism by providing interactive, sensory-based experiences that speak deeply to today's travellers. Their popularity boomed during the COVID-19 pandemic, which spurred digital acceptance and rewrote consumer behaviour, ensuring virtual tourism a viable, immersive option. These virtual technologies have increased accessibility to international destinations, preserved cultural heritage, and improved engagement, especially for younger, digitally literate audiences (Siddiqui et al., 2022; Isufi et al., 2023).



International brands like Marriott and IKEA have been able to implement immersive tools to allow consumers to "try before they buy," minimizing uncertainty and maximizing satisfaction (Zandi, 2024). Research has established that immersive media not only evokes emotional investment but also greatly influences decision-making in the event and tourism industries (Isufi et al., 2023).



In the Indian context, the travel sector provides rich soil for immersive technologies with government-backed national digital initiatives such as Digital India. Despite issues like exorbitant costs, weak rural connectivity, and poor awareness, India has witnessed promising progress through public-private partnerships. Iconic cultural landmarks such as the Taj Mahal and Qutub Minar have been virtually simulated, while Kerala and Rajasthan have used 360-degree VR and AR-facilitated festivals to global acclaim (Khanal, 2024).

India's pluralist cultural canvas offers a potential to create adaptive, region-based immersive experiences that can appeal to diverse local constituencies. Percept-X presents itself as a response to these global and local forces, a low-cost, scalable proof-of-concept with the purpose of augmenting tourism and hospitality marketing by the intersection of touch, narrative, sound, and scent to recreate real experiences.

By addressing the hefty prices, infrastructure requirements, empirical research deficits, and ethical issues, particularly data confidentiality and consumer trust (Özdemir, 2021; Kannan, 2024), this study aims to democratize immersive participation. Nourished by learnings derived from the Smart India Hackathon, the project is centred on responsible innovation and stresses heavily on inclusiveness, affordability, cultural suitability, and ethical implementation. It seeks to empower small and medium-sized tourism enterprises with immersive solutions that are impactful and affordable (Shrivastava, 2024; Rane et al., 2023).

Motivation of the Study

All innovative concepts often begin with a simple question. During participation in the Smart India Hackathon, which is a national platform encouraging students to solve real-life problems and promote innovation, a key question emerged: *Can technology truly replicate the feeling of travel?* This question became the foundation for developing Percept-X, a concept focused on creating engaging, sensory-rich experiences that connect modern travellers with the world of hospitality on a deeper emotional level.

In today's fast-paced digital age, travellers no longer seek only information; they seek experiences, even before their journey begins. Traditional marketing tools such as brochures and promotional videos often fall short of meeting these evolving expectations. This gap highlighted the need for a more immersive and impactful approach. Percept-X addresses this need by blending sensory modes like Augmented Reality (AR), Virtual Reality (VR), sound, touch, and scent to transform conventional marketing into an interactive and participatory experience.



The aim is to offer a more meaningful, pre-arrival connection with destinations and services, enhancing decision-making and emotional engagement in the tourism and hospitality sector.

Literature Review

Studies on augmented reality (AR), virtual reality (VR), and immersive technologies for tourism, marketing, and heritage are emerging rapidly. Zandi (2024) examines how historical tourism, for example, Iran's Silk Road, can be revitalized using AR and VR, even with geographic and implementation issues.



Similarly, Ahmed (2022) points to the increased application of AR, VR, and AI in digital marketing, coupled with a lack of empirical studies that solve actual business issues. Isufi et al. (2023) highlight how AR and VR revolutionize consumer behavior and advertising, and point to the needs of generational, privacy, and accessibility issues. Siddiqui et al. (2022) address virtual tourism and digital heritage management's potential for sustainability but note few practical use cases. Studies on sensory immersion like Li and Lee (2023) indicate that multisensory VR can impact behavior, whereas Khanal (2024) uncovers how data analytics with AR/VR redefine event marketing and tourism, albeit creating privacy concerns.

In the Indian context, the travel sector provides rich soil for immersive technologies with government-backed national digital initiatives such as Digital India. Despite issues like exorbitant costs, weak rural connectivity, and poor awareness, India has witnessed promising progress through public-private partnerships. Iconic cultural landmarks such as the Taj Mahal and Qutub Minar have been virtually simulated, while Kerala and Rajasthan have used 360-degree VR and AR-facilitated festivals to global acclaim (Khanal, 2024). India's pluralist cultural canvas offers a potential to create adaptive, region-based immersive experiences that can appeal to diverse local constituencies.

Hence, Percept-X presents itself as a response to these global and local forces, a low-cost, scalable proof-of-concept with the purpose of augmenting tourism and hospitality marketing by the

intersection of touch, narrative, sound, and scent to recreate real experiences. Studies on sensory immersion, like Li and Lee (2023) indicate that multisensory VR can impact behavior, whereas Khanal (2024) uncovers how data analytics with AR/VR redefine event marketing and tourism, albeit creating privacy concerns. Accessibility is one of the themes that occurs quite often in Altinay Özdemir (2021), which explores VR and AR's potential in facilitating travel for people with disabilities despite usability and affordability issues. Yu (2023) also explores how technology can deliver vacation experiences for aging tourists within a limited cultural framework. Shrivastava (2024) illustrates tangible AR and VR use in Indian tourism, showing heightened



engagement and economic returns despite technology access constraints. Multisensory VR, such as incorporating mist and taste, is found by Uhl et al. (2024) to enhance the presence and emotional involvement of users, predominantly within niche professional communities. In contrast, Siddiqui et al. (2022) report immersive travel's growth during the COVID-19 pandemic among younger generations, although high costs of equipment and authenticity issues persist. Systematic surveys of Shukla, Rana, and Prashar (2024) associate AR and VR experiences with greater travel satisfaction and repeat usage but emphasize ongoing concerns about affordability and access. This is reinforced by Isufi, Feruni, and Karaoglu (2024), who also refer to immersive marketing's potential to drive brand engagement and loyalty for youth, despite empirical deficiencies and cost considerations. Khan and Haiqal (2023) investigate the application of AR and VR in virtual museums for Gen Z to improve interactivity and interest, whereas Roy and Saha (2024) analyze how these technologies provide

pandemic-proof travel alternatives by opening new business prospects despite demographic and technical limitations. Broadening our insights beyond AR and VR, Rane et al. (2023) examine emerging technologies like AI, blockchain, and IoT in sustainable tourism, highlighting the environmental benefits as well as infrastructure challenges. Samaddar and Mondal (2023) complement this by investigating AR/VR adoption's effect on responsible tourist behavior in emerging economies by identifying key factors that influence sustainability despite geographic and stakeholder constraints. Finally, comparative analyses by Pinto and Huertas (2025) demonstrate that VR creates more intense emotional involvement in heritage experience and AR creates more uniform positive responses, particularly from older visitors.



They suggest that technology selection should be adapted to the nature of the heritage site. Balasubramanian et al. (2022) present a conceptual summary of AR and VR as marketing instruments in new hospitality markets, highlighting pre-experience benefits but pointing to gaps in evidence-based data and cost-effectiveness analysis. Together, the studies portray immersive technologies as revolutionary powers in tourism, marketing, and heritage, improving engagement, access, and sustainability, while highlighting enduring challenges around cost, privacy, infrastructure, and empirical research.

Research Gap

Although AR and VR technologies have been extensively researched for their promise to create more immersive experiences in tourism and hospitality (Ahmed, 2022; Isufi et al., 2023; Pinto & Huertas, 2025; Tom Dieck & Jung, 2018; Yung & Khoo-Lattimore, 2019), there has been a noticeable gap in discussions about the practical constraints that prevent their wider implementation, namely, the hefty costs of implementation, technical sophistication, and data privacy and ethics issues (Altinay Özdemir, 2021; Hoffmann & Mai, 2022; Khanal, 2024; Siddiqui et al., 2022; Zandi, 2024).

professionals perceive the utility and usability of such technology by organizational size and geographic location (Samaddar & Mondal, 2023; Yu, 2023). Furthermore, the performance of alternative, low-cost, and culture-friendly immersive solutions that incorporate sensory features like visuals, sound, smell, and physical walk-through spaces has not been adequately tested or benchmarked with respect to traditional AR/VR systems (Li & Lee, 2023; Uhl et al., 2024). This underscores the importance of quantitative studies examining how these factors drive user engagement, satisfaction, and adoption intent (Guo et al., 2024; Jangra et al., 2025; Zhou & Li, 2024), and in turn inform the



Even though previous research generally highlights the advantages of immersive technologies (Balasubramanian et al., 2022; Bretos et al., 2023; Calisto & Sarkar, 2024; Shrivastava, 2024), they still lack studies that provide empirical support on how these barriers statistically affect adoption rates, especially for small and medium-sized tourism businesses (SMEs) (Liang & Elliott, 2020; Shukla et al., 2024; Tom Dieck et al., 2024). There is also limited data-based understanding of how tourism

design of more accessible, inclusive, and scalable immersive products for the tourism and hospitality sector (Chen et al., 2024; Isufi et al., 2024; Khan & Haiqal, 2023; Roy & Saha, 2024).

Aim of the Study

To develop Percept-X, a multi-sensory immersive prototype aimed to enhance marketing for hotels and tourism by integrating olfactory, auditory and perceptual elements.

Objectives

- Objective 1: To analyze the need for Promoting and Marketing Hotel and Tourism Business through the developed sensory prototype
- Objective 2: To develop a cost effective multi-sensory immersive prototype
- Objective 3: To examine the impact of the developed sensory prototype through customer experiences and gauge their privacy concerns

Results and Discussions

Reliability Test: Data 1

To assess the need for promoting hotel and tourism businesses through a sensory-based prototype like Percept-X (Objective 1), a structured questionnaire was distributed to industry professionals unfamiliar with the prototype. It explored perceptions, expectations, and demand for multi-sensory immersive marketing versus traditional methods, focusing on its impact on customer interest, emotional engagement, and decision-making. A Cronbach’s Alpha test confirmed the questionnaire’s consistency and reliability.

Variables	Description	Values	Internal Consistency
K	No. of Items	8	Good
$\sum s^2y$	Sum of the item variance	7.83	
s^2x	Variance of total score	27.26	
α	Cronbach’s Alpha	0.81	

The reliability test, conducted on 8 items related to promoting hotel and tourism businesses through a sensory prototype, yielded a Cronbach’s Alpha of 0.81, indicating good internal consistency. This confirms the questionnaire was well-aligned and reliably

interpreted, supporting its use in evaluating Percept-X’s effectiveness in enhancing promotional strategies.

Demographic Profile of Respondents for Objective 1 Survey

Category	Sub-Category	Percentage
Geographical Distribution	North India	21.7%
	South India	43.5%
	East India	2.2%
	West India	32.6%
Organizations Represented	Hotels/ Resorts/ Hospitality	53.1%
	Tourism/ Travel	24.5%
	IT/ Technology/ Consulting	6.1%
	Education (Colleges/EdTech)	4.1%
	Real Estate/ Builder	2%
	Finance/ Trade	2%
	Oil/ Energy	2%
	Pharmaceuticals	2%

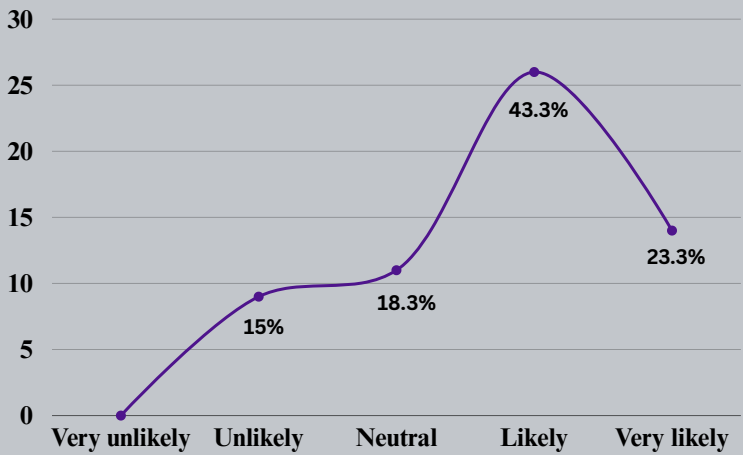


Organizations Represented	Social media / Marketing	2%
	Retreats and Getaways	2%
Professional Standing	Top Management	27.7%
	Middle Management	12.8%
	Officers/ Specialists	36.2%
	Entry level/ Assistants	21.3%
	Developer	2.1%

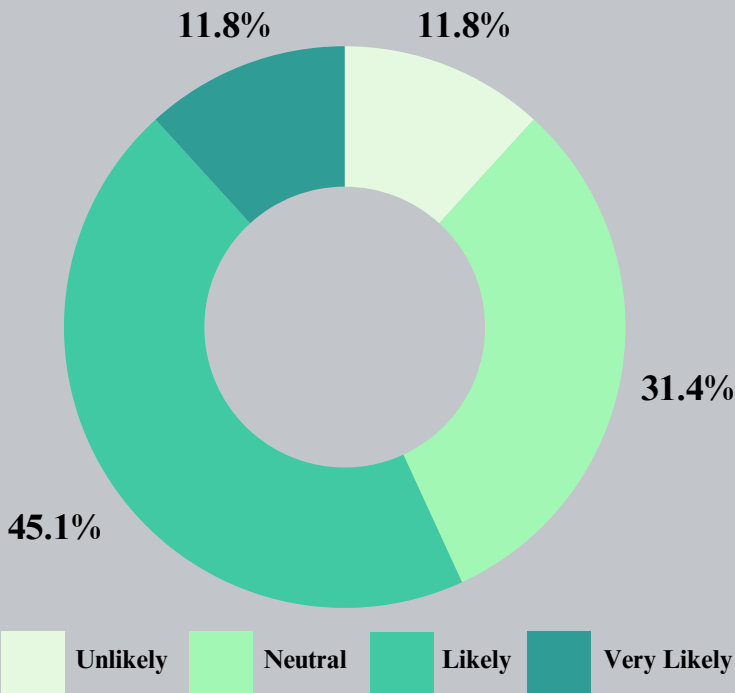
From the geographical distribution, most of the participants come from South India (43.5%) followed by West India (32.6%), showing high regional participation from these regions. The hospitality industry leads representation with 53.1% of organizations being hotels, resorts, or hospitality-related, followed by tourism and travel at 24.5%, showing the event's focus on the core industry. Regarding occupational status, Officers/Specialists (36.2%) and Top Management (27.7%) constitute the most participants, indicating a combination of decision-makers and operational specialists. The fact that IT, education, financial, energy, and marketing professionals are present indicates a diversified industry interest, paving the way for interdisciplinary interaction.



Audience Likelihood to Engage with Sensory Immersive Hardware Experience



The line graph indicates an unmistakable upward trend in audience attitude towards sensory immersive hardware configurations with synchronized olfactory, audio and visuals. The steep rise of the curve at "Likely" indicates keen interest, with the curve continuing towards to "Very Likely", suggesting enthusiasm and receptiveness. The line is flat at "Very Unlikely" and barely raised at "Unlikely", pointing to little resistance. A slight dip at "Neutral" indicates some ambivalence that might be overcome by enhanced knowledge or experiential learning. The graph, however, projects a very positive degree of openness to consideration, presaging high potential for uptake and interaction.



The pie chart indicates a positive direction, with a combined 56.9% of the group being likely (45.1%) or very likely (11.8%) to suggest investment in a sensory immersive hardware. Another 31.4% are neutral, reflecting an open-minded group that could potentially be swayed by additional awareness or demonstrations. Just a small percentage (11.8%) are solidly opposed. Overall, the information indicates a large and expanding base of support for incorporating physical and sensory hardware technologies into customer experiences.

Reliability Test: Data 2

To address one of the the objectives, a questionnaire was given to participants who experienced Percept-X firsthand. This captured real user feedback on their experience, emotional response, usability, and privacy after which a reliability test was conducted.

The reliability test confirmed the responses were consistent, ensuring the data is valid for evaluating the prototype’s effectiveness and improvements.

Variables	Description	Values	Internal Consistency
K	No. of Items	8	Good
$\sum s^2y$	Sum of the item variance	7.83	
s^2x	Variance of total score	27.26	
α	Cronbach's Alpha	0.81	

The table above shows the reliability test results for the Percept-X user experience questionnaire. With a Cronbach’s alpha of 0.90, the 8-item survey demonstrates excellent internal consistency, indicating it reliably measures user perception of the immersive sensory experience. The high total item variance (9.04) and total score variance (42.17) confirm consistent responses, validating the feedback data for sound analysis and conclusions.

T-Test Results for Evaluating Percept-X Across Multiple Hypotheses

Result 1: Customer Influence of Percept-X

Parameter	Value
Test Type	Independent Two-Sample T-Test (One-Tailed)
Null Hypothesis (H0)	No significant influence of Percept-X on customer interest and decision-making
Alternative Hypothesis (H1)	Percept-X significantly influences customer interest and decision-making
T-Statistic	-3.03
P-Value	0.0032
Significance Level	0.05
Conclusion	Reject Null Hypothesis (H0)

Percept-X’s impact on customer interest and decision-making (influence) was assessed using responses with embedded numeric ratings. After extracting the numeric values, an independent two-sample T-Test yielded a T-statistic of -3.03 and a p-value of 0.0032. Since the p-value is below 0.05, the null hypothesis is rejected, indicating that Percept-X significantly influences customer interest and decision-making.

Result 2: Customer Experience of Percept-X

Parameter	Value
Test Type	Paired T-Test
Null Hypothesis (H0)	Percept-X does not significantly enhance the immersiveness or memorability of the customer experience
Alternative Hypothesis (H1)	Percept-X significantly enhances the immersiveness and memorability of the customer experience
T-Statistic	4.09
P-Value	0.0000604
Significance Level	0.05
Conclusion	Reject Null Hypothesis (H0)

The T-Test results show a T-statistic of 4.09 and a p-value of 0.0000604, which is well below the 0.05 significance level. This indicates convincing evidence against the null hypothesis, confirming that Percept-X significantly enhances the immersiveness and memorability of customer experiences.

Result 3: Impact of Percept-X on User Concerns about Privacy and Ethics compared to typical AR/VR Systems

Parameter	Value
Test Type	Paired T-Test
Null Hypothesis (H0)	Percept-X does not significantly reduce these concerns, while the alternative hypothesis
Alternative Hypothesis (H1)	Percept-X does significantly reduce these concerns
T-Statistic	-5.32
P-Value	0.00000096
Significance Level	0.05
Conclusion	Reject Null Hypothesis (H0)

The paired T-Test (t= -5.32, p= 0.00000096) provides strong statistical evidence to reject the null hypothesis, confirming that Percept-X significantly reduces user concerns about privacy and ethics compared to typical AR/VR systems. The extremely low p-value indicates this effect is not due to chance, underscoring Percept-X’s effectiveness in enhancing user trust through ethical and privacy-conscious design.

Conclusions and Future Scope

The survey exhibited the need for promoting hotel and tourism businesses through a prototype, and Percept-X successfully demonstrated that a low-cost, multi-sensory immersive prototype, integrating sight, sound, and smell, can enhance emotional engagement, user satisfaction, and memorability beyond conventional AR/VR. User responses indicated strong acceptance, ease of use, and excitement about its potential, particularly in hospitality, tourism, and experiential marketing. Despite minimal reliance on advanced technology, Percept-X outperformed typical AR/VR in emotional impact and sensory depth. Future development may explore climate simulation (e.g., wind, temperature), dynamic LED or projection displays, and modular scalability to suit diverse spaces, from pop-ups to permanent installations. This opens avenues in tourism,

education, retail, therapy, and virtual storytelling, where emotional immersion is key.

However, limitations such as a narrow test demographic, basic hardware, and reliance on subjective responses suggest the need for broader field testing, comparative benchmarking, and integration of biometric or long-term data to validate impact. Ethical concerns around sensory influence and data privacy also merit deeper exploration.

Percept-X stands not just as a prototype but as a scalable, ethical, and human-centred reimagining of immersive experiences, offering a compelling template for future digital engagement across sectors.

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Development of Lemongrass Syrup and Liqueur

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Abstract

This study aimed to 'Develop Lemongrass Liqueur and Syrup' using lemongrass, which is a versatile herb used in various industries including food, beverages and cosmetics due to its unique flavor and aroma. In the Food and Beverage industry, lemongrass is gaining popularity as a key ingredient in mixers and cocktails. This project aims to capitalize on this trend by developing lemongrass liqueur and syrup using fresh lemongrass, offering a convenient and innovative solution for bartenders and mixologists. The ingredients used for making this product were fresh and locally sourced. Also, the recipes for the liqueur and syrup were tested several times before finalizing on the standard recipe. Multiple beverage trials were conducted by the team members and an Organoleptic evaluation was conducted with the aid of T-Test and Reliability Test and to gauge consumer acceptance and interpret the findings using the Analysis of Variance (ANOVA) test. The study hypothesized that the developed lemongrass liqueur and syrup would be highly acceptable among consumers of all age groups, was accepted.

Keywords: *Lemongrass, Liqueur, Syrup, Mixology, Beverage, Organoleptic, ANOVA, T-Test, Reliability Test*





Introduction

Lemongrass (*Cymbopogon citratus*) is a popular herb known for its refreshing citrus scent, healing properties, and many health benefits Mukherjee.S.,(2024). While it's long been enjoyed as a tea or infusion, it's now being used more often in specialty food and drink products. Putra et al. (2023). Lately, there's been a rising trend toward creating both alcoholic and non-alcoholic beverages that are herbal or botanical in nature, as more consumers seek out natural, functional, and craft-style options.

Motivation of the Study

The availability of lemongrass syrup and liqueur in India is limited, which makes it difficult for bartenders to incorporate its unique flavor into beverages consistently. Additionally, seasonal variations in lemongrass alter its taste, leading to unpredictable results in drinks. Traditional muddling techniques often cause inconsistencies, sometimes extracting too much sometimes too little, affecting the overall

balance of flavors. The Global Context of Flavoured Beverages and Value-Added Products briefly discusses the global trend towards natural, botanical, and unique flavoured beverages and spirits. It mentions the increasing consumer demand for innovative taste profiles beyond traditional options.

Literature Review

According to Vasconcelos et al. (2022), the production and physicochemical aspects of a do-it-yourself lemongrass liqueur were investigated. The research entailed the production of a vodka-infused lemongrass liquor aged for two months and measured parameters like pH, sugar level, alcohol percentage, and density. Their liqueur conformed to Brazilian norms for "fine liqueur" with an alcohol content of 15.2% and sugar content of 33%. It not only proves the viability of employing lemongrass as a principal flavoring component but also offers technical standards for optimizing flavor and regulatory acceptability. Additionally, their proposal to explore infusion

times and alcohol matrices provide realistic guidance for perfecting our formulation. Such level-by-level physicochemical examination is essential when developing high-end-quality drinks for demanding consumers.

As per the research of Faheem F., et al., (2022) identified a study on Lemongrass Essential Oil (LEO) as a natural preservative to extend food shelf life and safety. The research involved a literature review, experimental investigation of LEO's antimicrobial properties, microbiological testing, and chemical analysis of its active compounds. The findings revealed that LEO has significant antibacterial and antifungal properties, making it a safe alternative to synthetic preservatives while maintaining food quality. The study concluded that LEO can effectively preserve food by inhibiting microorganism growth, making it a safe alternative to synthetic preservatives. However, the study's limitations include the need for further research on the long-term effectiveness of LEO in different food types and environments. The study provides valuable insights into the potential of LEO in food preservation, but comprehensive real-world testing is still lacking.

According to Don et al. (2024) designed a clever fermentation experiment to increase lemongrass infusion antioxidant levels. Through a controlled yeast fermentation process and assessment of antioxidant levels before the fermentation process, they showed how it can effectively maximize beneficial properties for health. Throughout our project, particularly while creating mocktails or non-drinking alcoholic beverages by creating syrups, such an experiment offers excellent ground on which to label our products as antioxidant-dense.

However, since the research was done at lab scale, additional research must be conducted in an effort to scale up the process to commercial scales.

According to Putra et al. (2023), the research studies the influence of incorporating varying levels of lemongrass stalks in palm sugar herbal drinks. They have established that adding 10% lemongrass in the herbal drink enhances antioxidant activity, taste and color, hence its appeal and functionality as a health beverage. The scope of the study was limited to sensory evaluation surveys, with little chemical analysis.

As per the study of Santoso (2018) assessed the potential of lemongrass as a functional ingredient because of its alpha-glucosidase inhibitor (AGI) activity and its impact on physical and sensory characteristics when added to dairy products. It was found that lemongrass aqueous extract could be utilized as a functional ingredient with AGI activity. Application of heating and cooling treatments to mimic the treatment of ice cream and yoghurt decreased the activity, with increased heating durations and decreased concentrations of lemongrass extract showing more precipitous degradation.

Majewska et al. (2019) investigated the potential of lemongrass oil in food preservation as well as several extraction techniques. The oil exhibits potential as a natural preservative because of its potent antibacterial and antioxidant qualities. The study did, however, highlight the necessity of more clinical trials and established procedures. One significant issue is the paucity of research on food preservation applications.

Research Gaps

Lemongrass has been extensively studied for its medicinal properties and aromatic compounds, but research on its use in beverage formulations, particularly syrups and liqueurs, remains limited. The impact of seasonal variations on lemongrass’s chemical composition and essential oils has been documented, yet there is a lack of standardized extraction methods to maintain consistency in flavor and aroma throughout the year.

Existing studies on muddling and infusion techniques highlight challenges in achieving uniform flavor extraction, but there is minimal research on optimizing processing methods specifically for lemongrass-based beverages. Additionally, while botanical spirits research explores stabilization and aging techniques, their application in lemongrass liqueurs is underexplored.

The examination of preservation techniques, formulation standardization, and commercial feasibility, creating an opportunity for further investigation to develop reliable, scalable solutions for the industry, has been missing as one of the gaps.

Aim of the study

To develop lemongrass liqueur and syrup, and study its acceptance.

Objectives

To study different methods of preparation of liqueur and syrups.

To develop and standardize recipe of lemongrass liqueur and syrup.

To study and analyze the acceptability of the developed liqueur and syrup.

Results and Discussions

Table: Overall Acceptability from Sensory Evaluation

Sl. No.	Response	Values
1	Syrup Overall acceptability	94.54%
2	Liqueur Overall acceptability	85.46%
3	Cocktail overall acceptability	90.91%
4	Mocktail overall acceptability	92.73%

In the table above, it can be noted that the research confirms a strong preference for lemongrass syrup and liqueur, with high positive reception.



Conclusion and Future Scope

The development of lemongrass liqueur and syrup successfully addresses key challenges in maintaining flavor consistency and accessibility in the beverage industry. Through sensory analysis, lemongrass syrup emerged as the most preferred product, while the liqueur showed potential for refinement. The study highlights the viability of lemongrass-based products as a cost-effective and innovative solution for

bartenders, offering year-round flavor stability and market expansion opportunities. By bridging gaps in availability and standardization, this research contributes to the broader exploration of indigenous ingredients for commercial and artisanal applications in India's evolving beverage landscape. Future research can refine lemongrass liqueur for better consumer acceptance and explore advanced stabilization techniques. Expanding market studies and sensory evaluations will aid in optimizing commercialization strategies.

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The Mahua Experience

Development of Beverages using Mahua (Madhuca Longifolia)

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Abstract

This study aims to develop Mahua-based cocktails as a sustainable and culturally rooted offering for modern bars and restaurants, aligning with the growing trend of using indigenous and sustainable ingredients in mixology. Mahua (Madhuca Longifolia) liquor, traditionally consumed by Indian tribal communities, carries a distinctive earthy and floral flavor profile that remains largely untapped in contemporary beverage menus. By exploring its cultural significance and commercial potential, the project seeks to develop innovative cocktails through experimental trials and sensory evaluations. A market survey revealed increasing interest in unique, locally sourced ingredients, highlighting an opportunity for Mahua to make its mark in the evolving landscape of modern mixology. The initial phase of the study focused on crafting cocktails that highlight Mahua's versatility, aiming to balance its bold flavor with complementary elements suited to contemporary palates. Multiple recipe trials led to the creation of drinks such as "Khatta Chaska,"



"Desi Shot," "Mahu-Malai," "Margarita," and "Sex on the Beach," each featuring Mahua as the core spirit. These beverages were evaluated by a selected panel using a 9-point Hedonic Scale to assess key sensory attributes, ensuring the final offerings resonate with both traditional roots and modern consumer preferences. After conducting sensory evaluations focusing on Appearance, Taste and Flavour, Mouthfeel, Aroma, and After Taste. Results showed a high acceptance rate of 92-100% across five cocktail recipes, indicating strong potential for future research and development.

Keywords: Mahua, Indigenous, Sustainability, Mixology, Cocktails, Sensory Evaluation, Local Ingredients, Innovation





Introduction

Mahua (*Madhuca longifolia*), known as the butter tree, is a tropical species native to India and closely tied with the cultural and economic lives of tribal communities. The sweet, sugar-rich flowers (68–72%) are traditionally fermented and distilled into Mahua liquor, also known as Mahuli—a dark, mildly sweet and floral spirit. Majorly produced in home stills, this liquor is not only a daily beverage but also holds ceremonial importance, consumed during tribal festivals and rituals.

According to BBC Travel (2022) Mahua: The Indian liquor the British banned, India Today (2025) Are feni, mahua and other country liquors making it to mainstream bar menus?, YourStory (2023) India's forgotten spirit Mahua makes a comeback. Historically, Mahua liquor faced marginalization due to colonial-era restrictions and social stigma, which kept it out of mainstream markets. However, with the modern emphasis on sustainable, locally sourced, and culturally authentic ingredients, Mahua has the potential to create interest in the craft cocktail industry. Its low environmental impact and economic benefits for rural producers make it a valuable indigenous spirit, that aligns with current trends. Combining Mahua Liquor, with the concept of cocktails enables it to generate interest and penetrate the mixology space.

As such, Mahua liquor stands at the crossroads of tradition and innovation, ready for a renaissance within both the Indian and international beverage industries.

Motivation of the study

This study was driven by the desire to address practical challenges in the underutilization of indigenous ingredients like the Mahua flower, which remains largely unexplored in contemporary mixology. By integrating Mahua into modern cocktail formulations, the research seeks to rediscover and reintroduce its cultural and historical significance. The study also aims to expand scientific understanding of traditional spirits by experimenting with Mahua as a base in innovative drink preparations. Furthermore, it explores consumer acceptance through sensory evaluation methods, contributing to both practical and theoretical knowledge in the evolving field of natural, handcrafted beverages.

Literature Review

According to Bhattacharya, N (2017), Country' liquor itself was a generic term for distilled spirits, most commonly from the mahua flower, particularly where it was abundant in western and central India. Later, they were also manufactured from molasses, a by-product of the sugar industry. The manufacture of spirit alcohol required investment in the form of a factory plant, but it was cheap to produce, especially for those who distilled it from the leaves of the mahua tree. The raw material was very cheap; often its cost comprised only the pittance paid to the forest tribes who collected it. When the Government of Bombay passed the Abkari Act in 1878, it was designed to discourage home-brewing and fermenting, largely to prevent haemorrhaging of excise revenue. This left the use of mahua flowers for producing alcohol legally and exclusively to the distillers who paid the relevant excise duties and fees. In colonial India, the government establishment as well as general consumers believed in the superior quality of manufactured goods by British-owned companies, and this included most consumer products, including liquor.

According to Sahu, R. Kumar (2018), British administrators interfered long back, alternately making its manufacturing illegal and placing a heavy tax on it. In effect, mahua becomes a 'low-caste' drink that respectable people in a town will not drink. Also identified as one of the reasons that illegal brewing and spiking the drink with battery fluid and other toxic substances to give a kick has made it worse.

According to Kamal, A. (2015), "Five samples of Mahua (*Madhuca longifolia*) liquor were analysed

for the presence of methyl alcohol, ethyl alcohol and their percentage in which all samples given positive result for presence of ethyl alcohol while methyl alcohol was found absent. In this study, the potential of mahua flowers, comparatively a cheap carbohydrate source for ethanol production, has been studied. In coming next generation, the importance of plant and mahua tree is going to be increase because of their effectiveness, easy availability, low cost and comparatively being devoid of toxic effect."

According to Serpico, D. et al. (2020), the presentation of Mahua liquor cocktails offers a promising direction towards the re-invention and normalization of the traditional drink. They bring out that understanding the prototypical structure of cocktail concepts—where the character-defining aspect of a drink is less in terms of specific ingredients but rather in function and flavor profile—can allow room for flexibility and creativity in cocktail creation. This structural approach suggests that the same cocktail can be reinterpreted anew in new venues, at new times, and in new locales with local ingredients available or locally culturally meaningful, such as Mahua. In practice, this enables bartenders of diverse backgrounds to communicate plainly with one another through a shared cocktail language while retaining personal or regional flair. Based on this, cocktails made with Mahua not only can be a renaissance of indigenous tradition, but also can be a platform for innovation and cross-cultural mixology.

According to Kanojia , V., & Hindalkar, N. (2021), The rise of speakeasy-style bars has become a prominent trend, driven by the desire for immersive and exclusive drinking experiences. These hidden or retro-themed establishments

provide an escape from the ordinary, with elaborate cocktail menus, atmospheric settings, and an emphasis on storytelling. Furthermore, sustainability has become a critical focus in the cocktail industry. Bartenders and bar owners are adopting eco-conscious practices, such as reducing waste, using local and seasonal ingredients, and implementing sustainable sourcing and production methods. This trend not only appeals to environmentally conscious consumers but also enhances the overall reputation and image of the establishments.

Research Gaps

Limited Awareness of Mahua Liquor: Despite its deep cultural roots and indigenous relevance, Mahua liquor remains largely unknown to the wider public. There is a significant lack of comprehensive research on how this awareness gap affects its acceptance and market positioning, leaving unanswered questions about effective strategies for mainstream integration.

Insufficient Research on Flavor Profiles: While Mahua has potential as a craft spirit, there is surprisingly little in-depth scientific and sensory work on its flavor profile. This lack of standardized data creates challenges in product development, making it difficult to define quality benchmarks or educate consumers, which is an essential step for innovation in the beverage space.

Underutilized Use in Cocktails: Although Mahua possesses unique properties suitable for mixology, its application as a base in cocktails is rarely documented. There is minimal research exploring this intersection, leaving a gap in both academic literature and practical experimentation, and raising the unresolved

question of how Mahua can be effectively adapted into modern bar culture.

Limited Market Availability: Existing research offers conflicting views on the scalability of Mahua-based products. While some efforts have brought Mahua to niche markets, there is still an evident lack of studies evaluating the challenges of expanding distribution to urban and international consumers. This gap makes it difficult to conclude the commercial viability and policy frameworks required for widespread adoption.

Aim of the Study

To develop innovative beverages using Mahua flower and liquor (*Madhuca Longifolia*), explore its potential as a sustainable, culturally significant, and commercially viable ingredient while analyzing its sensory attributes and market acceptance.



Objectives

- Objective 1: To develop cocktails using Mahua as the base ingredient.
- Objective 2: To analyse the classic cocktails' (variation) and formulated innovative cocktails' acceptability.
- Objective 3: To evaluate the acceptance of the developed product using sensory evaluation methods.

Results and Discussions

Sl. No.	Response	Value
1.	Overall Acceptability Rating by Appearance of each cocktail	P Value (0.111)
2.	Overall Acceptability Rating by Taste & Flavour of each cocktail	P Value (0.005)
3.	Overall Acceptability Rating by Mouthfeel of each cocktail	P Value (1.405)
4.	Overall Acceptability Rating by Aroma of each cocktail	P Value (2.364)
5.	Overall Acceptability Rating by After Taste of each cocktail	P Value (1.864)
6.	Overall Acceptability Rating of each cocktail	P Value (0.000)

In the above table, it can be noted that the analysis shows that attributes like appearance, mouthfeel, aroma, and aftertaste have no significant differences between the products, except for the rating by taste and flavour.

Conclusions and Future Scope

This paper has assessed how Mahua liquor-based classical and innovative cocktails were perceived by the consumers. It was accomplished by conducting sensory evaluations, based on Appearance, Taste, and



Flavour, Mouthfeel, Aroma, and After Taste. It was observed a strong, positive percentage result varying from 92% to 100% acceptance was observed across the five distinctive cocktail recipes. Statistical tools, including ANOVA and T-tests, confirmed the significance of these results and underscored Mahua's strong appeal when presented innovatively. The study concludes that Mahua-based cocktails can serve as a powerful tool to reintroduce indigenous flavors into the mainstream beverage space, aligning with trends favoring sustainability, cultural authenticity, and artisanal spirits.

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Development of Healthy Food Products Using **Sunflower Seeds Flour**

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Abstract

This research explores Sunflower Seeds Flour (SSF) nutritional and culinary value by developing innovative products. It is observed that SSF offers numerous health benefits, including anti-inflammatory properties, heart protection, and high levels of amino acids, minerals, vitamins, and antioxidants.

SSF help control blood pressure, reduce cholesterol, provide healthy fats and protein, and has anti-cancer benefits. This study also explores the development of healthy food products using sunflower seed flour, highlighting its history, health benefits, culinary uses, preparation methods, and symbolic beauty. Two innovative, sugar-free products were formulated i.e, Sunflower Chocolate Bites (SCB):a blend of SSF, jaggery powder, honey,



chocolate, and amaranth seeds: and Sunflower Nourishing Milk Powder (NMP): a mix of SSF, dry fruits, and jaggery powder. Both were evaluated through sensory analysis. Based on the ANOVA test results, only appearance shows a statistically significant difference between the two products ($p\text{-value} = 0.0039 < 0.05$). All other sensory attributes (taste, flavor, mouth feel, aroma and aftertaste) show no significant differences between the two products ($p\text{-values} > 0.05$). The Sunflower's transformation from a cultural symbol to a culinary ingredient highlights its role in a sustainable future, focusing on the potential of sunflower seed flour to improve our nourishment and the planet.

Keywords: *Sunflower Seeds Flour (SSF), Sugar-Free Products, Nutritional Benefits, Sensory Evaluation, Sunflower Chocolate Bites (SCB), Nourishing Milk Powder (NMP)*

Introduction

Sunflower scientific name is 'Helianthus annuus', it belongs to the Asteraceae family and is an annual crop plant (Egea M. et al., 2021). Sunflower is one of the three most cultivated oil crops in the world. The principal by-product of the oil extraction process can account for up to 36% of the total mass of the processed seeds, emphasizing its importance within the overall production framework (Yegorov B. et al., 2019). Sunflower seeds are highly popular in food mixes, multi-grain bread and bars and are thought to be nutritionally beneficial. These seeds are rich in healthy fats, useful plant compounds and many vitamins and minerals (Kuraieef A., 2021).

Sunflower seeds are rich in proteins, healthy fats, vitamins, and minerals, providing anti-inflammatory, heart-protective, anticancer benefits, and supporting brain health (Sak K., 2024).

With its elevated protein content, low carbohydrate levels, and diverse vitamins and minerals, sunflower seed flour is an excellent substitute for traditional flour in baking and culinary applications. This study explores the development of healthy food products using sunflower seed flour, highlighting its history, health benefits, culinary uses, preparation methods, and symbolic beauty.

Motivation of the study

This study focuses on the creation of nutritious food products that prioritize both flavor and health. There is a growing realization among nutrition scientists that individuals should pay more attention to their intake of complex plant foods such as seeds, nuts, and whole grains daily (Scott.M et al., 2023).

By exploring the unique properties of sunflower seeds, the project aims to develop sugar free products while showcasing their numerous health benefits. The goal is to combine culinary excellence with scientific insights, ultimately enriching our diets with foods that promote well-being and vitality.

Literature Review

According to Aishwarya & Anisha (2014), sunflower seed flour showed high levels of protein, fat, and essential minerals, making it suitable for product development. Products such as laddoo, biscuit, and missi roti with 15% to 35% SSF incorporation demonstrated increased nutritional value and good consumer acceptance. Grasso et al. (2019) explored defatted sunflower seed flour as a

wheat flour substitute in biscuits. It has improved protein content and antioxidant activity, though affected colour and texture. Sensory results confirmed consumer acceptability at moderate inclusion levels.

According to Man et al. (2017) found that sunflower seed flour fortified biscuits (up to 35%) improved the nutritional profile and maintained sensory appeal.

As per the study of Methven et al. (2020) evaluated its use in muffins and concluded that 15% DSSF maintained good textural and sensory quality while increasing protein and ash content. Joshi et al. (2014) tested sunflower-based chikki and butter at 0%, 50%, and 100% substitution levels. All samples retained sensory acceptability over two months of storage.



According to Katrin (2024), sunflower seeds are rich in antioxidants and neuroprotective compounds, potentially reducing Alzheimer's disease risk.

Similarly, Ruchika Nandha (2014) highlighted sunflower seeds' benefits in managing cardiovascular issues, inflammation, and certain cancers due to their dense nutritional and phytochemical profile.

Gurkirat et al. (2020) demonstrated that sunflower seed incorporation in multigrain bread improved taste, texture, and nutritional value, especially after roasting.

Kaur et al. (2022) emphasized its functional properties, including emulsification and low anti-nutritional factors, supporting its wide food application.

Laguna et al. (2019) and Verde (2023) explored enzymatic treatments to address chlorogenic acid-related discoloration in baked goods made with sunflower seed flour. Consumer preference significantly improved when colour issues were resolved.

According to the Yamunadevi and Sabhitha (2014), and later Yamunadevi et al. (2023), evaluated sunflower seed fortified cookies, finding 20% incorporation gave the best organoleptic scores. Sunflower seeds' rich content of vitamin E, B vitamins, magnesium, and selenium enhance their nutritional value.

Smith et al. (2016) and Megias et al. (2009) confirmed that sunflower seed extracts possess strong antioxidant and anti-inflammatory properties. These phytochemicals remained bioavailable after digestion, supporting their inclusion in functional foods.





Zhenyuan Li et al. (2024) compared edible and oilseed sunflower varieties and found significant variation in nutritional and processing characteristics, reinforcing the importance of choosing the right seed type for food formulation. Overall, the secondary data supports the functional and nutritional potential of sunflower seed flour in multiple food formats, emphasizing its sustainability, versatility, and health benefits.

Research Gaps

Existing studies focus mainly on bakery products, with limited research on SSF use in other food types. Long-term stability, bioavailability, and robust statistical validation in sensory analysis are underexplored. Additionally, Indian dietary applications and consumer preferences remain insufficiently addressed.

Aim of the study

To study the health benefits of Sunflower Seeds Flour (SSF) and develop healthy food products using SSF.

Objectives

To study the health benefits of Sunflower Seeds Flour (SSF).

To develop nutritious food products using Sunflower Seeds Flour (SSF).

To evaluate the acceptance of developed food products using sensory evaluation methods.

Results and Discussions

Two products were formulated and evaluated using ANOVA test: Sunflower Chocolate Bites (SCB) and Sunflower Nourishing Milk Powder (NMP).

Sl. No.	Response	Value
1	Appearance	0.0039
2	Taste/Flavor	>0.05
3	Mouthfeel	>0.05
4	Aroma/Smell	>0.05
5	Aftertaste	>0.05

In the above table it can be noted that only the appearance of the two products showed a statistically significant difference ($p < 0.05$), while other sensory parameters did not show significant variation. This indicates that both products were equally acceptable in terms of taste/flavor, mouthfeel, aroma/smell, and aftertaste

Conclusions and Future Scope

This study demonstrates the viability of Sunflower Seed Flour in developing healthy, sugar-free food products. The results indicate strong consumer acceptance for both SCB and NMP, with minor differences in appearance. Given SSF’s nutritional profile and environmental benefits, it can be explored further in other product categories such as baked goods, ready-to-mix beverages, or even infant foods. Future research may focus on shelf-life studies, nutrient bioavailability, and scalability for commercial production.

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Study of Various

Coffee Movement and Service Methods

in India (With reference to Bengaluru city)

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Abstract

This study explores the evolution and influence of various coffee movements in India, with a focused lens on Bengaluru city at the forefront of the nation's contemporary coffee culture. From traditional filter coffee to third-wave cafés, the Indian coffee landscape has seen a significant transformation influenced by global trends and local adaptations. The research delves into the origins and philosophies behind international coffee movements- such as the first, second, and third waves and examines how these movements have shaped the

Indian coffee business, particularly in terms of service methods and customer experience. Special attention is given to how these service models from self- service to personalized barista interactions enhance both product quality and customer satisfaction. Furthermore, the project aims to raise awareness and understanding of these dynamic shifts among Hotel Management (HM) students. As part of this effort, an awareness training is proposed to bridge the academic and practical aspects of modern coffee service and appreciation. By studying this progression, students will gain



insight into the evolving hospitality industry and the role of innovation in coffee service. Ultimately, this study not only documents changing consumer preferences but also equips future professionals with the knowledge to thrive in a rapidly modernizing beverage sector.

Keywords: Coffee movements, service methods, third-wave cafés, Hotel Management students.

Introduction

Coffee, as one of the most universally consumed beverages, has been a subject of extensive research regarding its impact on human health. While moderate coffee consumption has been consistently associated with





numerous health benefits, including reduced risks of Type 2 diabetes, cardiovascular diseases, and mortality, the effects of heavy coffee consumption remain contentious.

As the understanding of the complex relationships between diet, lifestyle, and health outcomes continues to evolve, emerging evidence suggests that the timing of coffee consumption may play a crucial role in modulating its effects on human health. Specifically, the disruption of circadian rhythms, which regulate various physiological processes, including metabolism and energy homeostasis, may be influenced by the timing of coffee consumption.

Xuan Wang et al., (2025) study seeks to elucidate the relationships between patterns of coffee drinking timing, amounts of coffee intake, and mortality risk, leveraging data from the National Health and Nutrition Examination Survey (NHANES) and validated in additional cohorts.

Motivation of the study

The purpose of this study was to explore and analyze various coffee movements and service methods in India, with a specific focus on Bengaluru city. It aims to understand the evolution of coffee culture, the emergence of third-wave cafés, and how service styles differ across traditional and modern coffee establishments. The study also investigates the impact of these developments on consumer preferences and hospitality practices.



Literature Review

First wave of Coffee: Emerged in the 15th century, was marked by the spread of coffee from Ethiopia to the Arabian Peninsula, and eventually to the rest of the world (Morris, 2022). This wave was characterized by the traditional methods of coffee production, trade, and consumption, which were often rooted in cultural and social rituals.

For instance, coffee houses in the Middle East and Europe became important gathering places for intellectuals, artists, and politicians, fostering a sense of community and fueling debates and discussions (Hattox, 2021).

The first wave of coffee also saw the rise of coffee as a major commodity, with trade routes established between the Middle East, Europe, and the Americas. This led to the growth of coffee plantations and the development of new coffee varieties, such as Arabica and Robusta (Pendergrast, 2022).

However, this wave also had its drawbacks, including the exploitation of coffee farmers and workers, and the environmental degradation caused by large-scale coffee

production (Jaffee, 2024).

Some notable studies on the first wave of coffee include "A Rich and Tantalizing Brew: A History of How Coffee Connected the World" by Jonathan Morris (2022), which provides a comprehensive history of coffee from its origins to the present day.

Another study, "The Impact of Cafés on the Lives of Men" by IvyPanda (2021), explores the social and cultural significance of coffee houses in the Middle East and Europe during the 16th to 18th centuries.

Third wave Coffee : The third wave of coffee, which emerged in the 1990s and 2000s, is characterized by a focus on high-quality, distinctive, and expertly crafted coffee (Morris, 2022).

This wave is marked by a growing interest in specialty



coffee, with a focus on unique flavor profiles, sustainable production methods, and direct trade practices (Pendergrast, 2018).

As noted by Trish Rothgeb, co-founder of Intelligentsia Coffee, "the third wave is about taking coffee to the next level, about elevating it to an art form" (Rothgeb, 2013).

The third wave of coffee has also seen the rise of independent coffee shops and micro-roasters, which have become popular destinations for coffee connoisseurs (Illy, 2005).

These shops often feature expertly trained baristas, unique brewing methods, and a focus on coffee education and community building (Jaffee, 2007).

As noted by James Hoffmann, founder of Square Mile Coffee Roasters, "the third wave is about creating a sense of community around coffee, about bringing people together to share in the experience" (Hoffmann, 2014).

The third wave of coffee has also had a significant impact on the coffee industry, leading to changes in the way coffee is produced, traded, and consumed (Morris, 2018).

This wave has seen the rise of direct trade practices, which allow coffee roasters to work directly with farmers, cutting out intermediaries and ensuring higher prices for farmers (Pendergrast, 2010).

As noted by Geoff Watts, co-founder of Intelligentsia Coffee, "direct trade is about creating a more equitable and sustainable coffee industry, one that benefits farmers and consumers alike" (Watts, 2013).

Some notable studies on the third wave of coffee include "A Rich and Tantalizing Brew:

A History of How Coffee Connected the World" by Jonathan Morris (2018), which provides a comprehensive history of coffee from its origins to the present day.

Another study, "Uncommon Grounds: The History of Coffee and How It Transformed Our World" by Mark Pendergrast (2010), explores the social and cultural significance of coffee and the impact of the third wave on the coffee industry.

Fourth wave Coffee: The fourth wave of coffee is a significant shift in the coffee industry, focusing on inclusivity, quality, and social consciousness. This wave is characterized by the rise of small-to-medium coffee roasting shops, increased transparency, and a focus on specialty coffee beans. The fourth wave is also about making specialty coffee more accessible and inclusive, expanding it from a niche market to a broader audience.

One of the key aspects of the fourth wave is the emphasis on social consciousness and sustainability. This includes direct and fair trade practices, organic production, and reinvestment in farmers and their communities.

The fourth wave is also about creating a more equitable and sustainable coffee industry, where farmers are paid a living wage and coffee is produced in a way that respects the environment. In terms of consumer behavior, the fourth wave is characterized by a desire for unique and high-quality coffee experiences. This includes a focus on flavor profiles, aroma, and texture, as well as a willingness to pay more for specialty coffee. The fourth wave is also about creating a sense of community and connection among coffee lovers, whether through coffee shops, online forums, or social media.



Overall, the fourth wave of coffee represents a significant shift in the industry, one that prioritizes quality, sustainability, and social consciousness. As the coffee industry continues to evolve, it will be important to watch how the fourth wave unfolds and what impact it will have on coffee producers, consumers, and the environment.

Research Gaps

Limited Focus on Tier-2 and Tier-3 Cities: Most research is concentrated on metropolitan areas like Bengaluru, leaving a gap in understanding how coffee culture and service methods are evolving in smaller cities across India.

Lack of Consumer Behavior Studies: There is minimal data-driven research on consumer preferences, motivations, and satisfaction levels in relation to different coffee service models (e.g., quick-service vs. artisanal cafés).

Insufficient Study of Employee Perspectives: Few studies have examined how baristas and café staff perceive the shift in service expectations, training, and working conditions across traditional and third-wave coffee shops.

Underrepresentation of Indigenous Coffee Practices: Research often overlooks India's traditional coffee preparation and serving styles, such as those from Coorg or Tamil Nadu, which could offer insights into sustainable or culturally rooted service methods.

Impact of Digital Technology on Coffee Service: The influence of technology—like mobile ordering, digital payments, and online branding—on coffee service models and customer experience in Indian cafés is not thoroughly explored.

Aim of the Study

To study various coffee movements and understand its different service methods in India.

Objectives

Objective 1: To study various coffee movements around the world and in India.

Objective 2: To study the different service methods bought in through these coffee movements.

Objective 3: To create awareness of various coffee movements among Hotel Management (HM*) students through value added course.

Results and Discussions

The study revealed that India's coffee culture has undergone a significant transformation, particularly in urban hubs like Bengaluru, which serves as a melting pot for diverse coffee movements. Traditionally dominated by filter coffee and local cafés like Indian Coffee House, the scene has expanded with the emergence of global and artisanal brands. Third-wave cafés such as Third Wave Coffee and Blue Tokai are redefining the coffee experience by focusing on traceability, brewing methods, and customer education. These establishments highlight the shift in consumer preferences from quick, low-cost beverages to thoughtfully crafted, high-quality cups. Additionally, the service methods vary greatly, ranging from the self-service model seen in legacy chains like Café Coffee Day to the highly personalized, barista-led service in newer boutique outlets. The evolution of service style not only reflects the changing expectations of consumers but also emphasizes the growing importance of customer engagement and ambiance. Interestingly, the data suggests that Bengaluru's youth and working professionals are key drivers behind this movement, seeking not just coffee but a lifestyle experience.

This dynamic interplay between coffee quality, service design, and customer values is shaping a new era of café culture in India.

Table: Awareness of Coffee Movements

Sl. No.	Response	Value
1	Awareness of Third Wave Movement	78%
2	Outlets Following Specialty Coffee Culture	64%
3	Outlets Offering Espresso Machines	85%
4	Preference for Counter Service	60%
5	Importance Given to Sustainability	72%

In the above table, it can be noted that people are more aware of the third-wave coffee movement and the majority of the outlets offer services in espresso machines.

Conclusions and Future Scope

The study of coffee movements and their corresponding service methods in India, particularly in the dynamic setting of Bengaluru—reveals a rich and evolving coffee culture. The findings indicate that a significant number of professionals in the industry are aware of the third-wave coffee movement and recognize its impact on redefining quality, service, and customer engagement. Many outlets are aligning themselves with specialty coffeehouse models, focusing on artisanal brewing techniques and enhanced customer experiences. Many outlets are aligning themselves with specialty coffeehouse models, focusing on artisanal brewing techniques and enhanced customer experiences. Espresso machines remain the most commonly used equipment, reflecting a blend of tradition and modern espresso-based preferences.

Counter service emerges as the most popular method, balancing efficiency with a touch of personalization, especially in high-traffic urban areas. Encouragingly, sustainability is seen as highly important by the majority of respondents, indicating a shift towards more environmentally conscious operations. However, awareness of newer movements like the fourth and fifth waves remains limited, and not all outlets offer formal training to staff on emerging service trends.

These gaps present an opportunity for education and innovation in the coffee and hospitality sector. Overall, the study highlights a strong foundation and growing enthusiasm among coffee professionals, paving the way for a more informed and service-oriented coffee industry in India.



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Smart Stays 2.0

Personalizing Hospitality With Artificial Intelligence (AI)

Precision

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Abstract

This paper investigates the transformative potential of Artificial Intelligence (AI) in revolutionizing guest personalization within the hospitality industry. By exploring current AI applications, examining relevant tools and technologies, and identifying key implementation challenges, this study aims to provide a comprehensive understanding of AI's role in enhancing guest experiences. Drawing upon secondary sources through academic papers, industry reports, and published case studies, the research proposes actionable strategies for effective AI integration. The findings underscore AI's significant capacity to deliver highly personalized, data-driven services, while emphasizing on ethical adoption and strategic integration are paramount for achieving long-term success in the hospitality sector.

Keywords: *Artificial Intelligence, Hospitality, Personalization, Smart Hotels, Guest Experience, Service Innovation*

Introduction

The hospitality industry is witnessing a rapid transformation driven by the advent of Artificial Intelligence (AI). As guest expectations evolve toward more seamless, customized, and intuitive service experiences, hospitality providers are under increasing pressure to innovate.



AI has emerged as a pivotal enabler of hyper-personalization, allowing hotels to tailor services, recommendations, and interactions based on individual guest profiles and real-time behavior. From smart room features and AI chatbots to predictive analytics and sentiment analysis, AI is no longer a futuristic concept but a present-day tool revolutionizing the industry (Scutaru & Stoica, 2022). Guests today are not satisfied with standardized offerings; they seek relevance, ease, and empathy—qualities that AI systems, when designed ethically, can provide with consistency and scale. By leveraging large volumes of structured and unstructured data, AI can identify patterns, preferences, and predictive needs to deliver highly targeted and responsive services (Jogarao, 2021). Moreover, AI offers operational efficiency by automating routine tasks and freeing human staff to focus on complex guest needs that require emotional intelligence. This symbiotic relationship between human service and intelligent automation redefines the guest journey from booking to post-stay follow-up.

A key driver for the growing use of AI in hospitality is the demand for personalization at scale. Traditional CRM systems, while useful, lack the real-time agility that AI-powered systems offer. With the help of Natural Language Processing (NLP), machine learning (ML), and computer vision, AI can transform not just the

guest experience but also the strategic capabilities of hospitality businesses. Personalized room settings, curated dining suggestions, AI-based concierge services, and proactive resolution of complaints are only a few ways AI contributes to elevating guest satisfaction. The implications of AI extend beyond the guest interface into internal hotel operations, including smart inventory management, dynamic pricing strategies, and staff scheduling. The importance of hyper-personalization is further amplified in the post-COVID hospitality environment, where contactless service, digital convenience, and emotional reassurance are paramount. AI technologies help address these needs while offering a scalable and measurable path to guest satisfaction and brand loyalty. However, challenges such as data privacy, ethical transparency, and integration costs continue to influence the adoption curve. Therefore, understanding the role of AI in crafting personalized guest experiences requires a multi-dimensional view that combination.



Motivation of the Study

The motivation behind this study was rooted in the dynamic and increasingly competitive landscape of the hospitality industry. In an era where guest expectations for personalized experiences are escalating, traditional approaches are proving insufficient. Guests no longer simply seek a place to stay; they desire tailored interactions, services, and recommendations that anticipate their needs and enhance their overall journey. Furthermore, with the rapid advancements in AI tools and technologies, it's crucial for the hospitality sector to not only embrace these innovations but also strategically navigate the inherent challenges such as data privacy, ethical considerations, and seamless integration with existing systems. This research aims to provide actionable insights, empowering hospitality stakeholders to make informed decisions that foster long-term success, enhance guest loyalty, and ultimately, redefine the very essence of hospitality in the digital age.

Literature Review

The integration of Artificial Intelligence (AI) into the hospitality industry has become a focal point in both academic research and industry practice.

Scutaru and Stoica (2022) emphasize that AI is a



critical enabler of luxury hospitality personalization, offering tailored experiences through guest behavior analysis, real-time decision-making, and adaptive service recommendations. Their findings reveal that predictive modeling and machine learning play a vital role in shaping the modern guest journey.

Jogarao (2021) presents a series of case studies from high-end hotels, where AI-enabled robots and smart concierge systems have improved operational efficiency and reduced human error. By automating repetitive service tasks and offering real-time guest interaction, AI has enhanced overall customer satisfaction and enabled hotels to allocate human resources more strategically.

Remountakis and Christou (2023) studied the use of conversational AI tools such as ChatGPT in delivering hotel recommendations. Their research demonstrated that such technologies can not only interpret guest preferences but also maintain persuasive and engaging dialogues in multiple languages—an essential feature in global hospitality contexts. These systems significantly reduce the need for front desk staff intervention while increasing service speed and consistency.

Bock, Wolter, and Ferrell (2021) introduced a framework categorizing AI into mechanical, thinking, and feeling systems. They argue that hyper-personalization is made possible through



“thinking AI,” which learns from previous interactions to deliver relevant, predictive experiences. Their framework supports the idea that AI is not just a tool but a strategic partner in enhancing service delivery.

Van Leeuwen and Koole (2022) explored how unsupervised machine learning techniques are used to segment hospitality customers based on behavior, rather than traditional demographics. This allows for more precise targeting and improved guest engagement through dynamic content and personalized offers.

Lastly, Limna (2023) highlighted the ethical concerns associated with AI in hospitality. While AI improves personalization and efficiency, it also raises issues around data privacy, consent, and transparency. The literature collectively suggests that while AI brings immense value to personalization, its implementation must be balanced with ethical and cultural considerations.

Research Problem

The hospitality industry is currently experiencing a transformative shift, driven largely by customer demand for more personalized and memorable experiences. Despite significant technological advancements and widespread digital transformation across the industry, a critical research problem persists: how to effectively and ethically implement AI to deliver hyper-personalized guest experiences. While AI-powered personalization has shown promising results in luxury hotel chains and digitally mature organizations, smaller or mid-range establishments often struggle with limited resources, skill shortages, and uncertainty about return on investment. Furthermore, there remains a disconnect between the technological

capability of AI systems and the actual expectations or comfort levels of guests, who may be wary of data misuse or algorithmic decision-making.

Research Gaps

There is a lack of empirical data evaluating the long-term effects of AI-based personalization on guest loyalty, especially in budget and mid-tier hotels. Many existing studies focus on either technical feasibility or customer satisfaction in isolation, ignoring the holistic impact across operational, ethical, and experiential dimensions. Another underexplored area is the cross-cultural perception of AI-based personalization. While some guests may welcome technology-driven customization, others may perceive it as invasive.





Aim of the study

To examine the role of AI in enabling hyper-personalized guest experiences in the hospitality sector and to develop ethical and practical frameworks for its adoption.

Objectives

To investigate how AI technologies are currently used for guest personalization in hospitality.

To identify barriers and challenges in adopting AI-based personalization.

To evaluate the ethical concerns and guest perceptions associated with AI use.

To propose strategic, scalable solutions for implementing AI personalization effectively.

Results and Discussions

This section provides a summary of findings from secondary research and synthesizes observations from various literature sources. The responses highlight the perceived value of AI in improving the guest experience, supported by recent implementations and guest feedback studies.

Table: Summary and Findings of Guest Experience

Sl. No.	Response	Value
1	Hotels using AI-based personalization tools	75%
2	Positive guest feedback on AI concierge services	82%
3	Increase in return visits due to personalization	64%
4	Hotels using ethical data usage frameworks	45%
5	Operational efficiency improvement due to AI	70%

In the above table it can be noted that AI-powered guest personalization is already gaining traction across the industry. Over 75% of hotels are using some form of AI-based service, and more than 80% of guests express satisfaction with AI-driven concierge systems. However, only 45% of properties have implemented clear ethical frameworks, indicating a gap in responsible AI usage. This highlights the need for balanced strategies that prioritize both innovation and guest trust.

To bridge the identified research and operational gaps, several strategic and technological solutions can be implemented in the hospitality sector:

Integrated AI Platforms: Hotels should adopt centralized AI systems that merge guest data from various touchpoints—such as booking engines, CRM systems, and in-stay services—into unified profiles. This enables real-time customization of services ranging from room ambiance to dining preferences.

AI Chatbots and Voice Assistants: These tools can serve as 24/7 virtual concierges that offer information, take requests, and even make

proactive suggestions based on guest profiles and behaviour. Multilingual and culturally adaptive Chabot's can further enhance inclusivity and guest comfort.

Smart Room Personalization: Hotels can implement IoT-integrated AI systems that adjust lighting, temperature, and entertainment options based on guest preferences detected from previous stays or input during check-in.

Ethical Data Governance: Transparency must be embedded in AI systems. Clear consent protocols, anonymization techniques, and compliance with GDPR and local data laws are essential. Guests should have control over what data is collected and how it is used.

Training and Change Management: Human staff should be trained to work alongside AI tools. Emphasis must be placed on enhancing emotional intelligence and service orientation to complement AI's analytical strengths.

These solutions ensure that AI is not just adopted for technological novelty but strategically integrated to enhance guest satisfaction, operational efficiency, and long-term brand loyalty.



Conclusions and Future Scope

This paper examined the transformative role of Artificial Intelligence in enabling hyper-personalized guest experiences within the hospitality industry. The research explored various applications of AI, such as virtual assistants, smart room automation, and predictive analytics, and discussed their potential to elevate service quality, improve operational efficiency, and increase guest satisfaction. Through a critical literature review and gap analysis, it became evident that while many hotels have begun integrating AI into their operations, challenges around data ethics, guest trust, and implementation scalability remain significant.

The study identified key barriers such as uneven technological adoption across different hotel tiers, lack of skilled human resources, and concerns over privacy and transparency. To address these issues, the paper proposed a multi-pronged solution strategy involving the adoption of centralized AI systems, ethical data governance, staff training, and enhanced guest engagement frameworks. These strategies can help bridge the gap between technological potential and real-world guest expectations. Looking forward, the future of AI in hospitality lies not only in technological sophistication but in its thoughtful application.



Hotels must invest in flexible and scalable AI architectures that can adapt to evolving guest needs and regulatory landscapes. Moreover, ongoing research is required to evaluate the cultural sensitivity of AI systems, as global hospitality markets involve diverse consumer bases. Longitudinal studies could also track how AI personalization affects customer lifetime value and brand loyalty over time.

In conclusion, AI has the power to revolutionize the hospitality industry through hyper-personalized experiences that were previously unimaginable. However, this transformation must be guided by ethical standards, cultural awareness, and a guest-centric philosophy. By aligning advanced technologies with human values, hospitality businesses can create truly memorable and sustainable guest journeys.

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Development of Macro Meals for a Healthy Lifestyle

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Abstract

The study focuses on examining dietary practices of bulking and cutting, with an emphasis on the development and assessment of macro-balanced meals to promote a healthy lifestyle. Bulking involves a caloric surplus to build muscle mass, while cutting focuses on a caloric deficit to reduce fat while preserving muscle. This study aims to understand these nutritional strategies and apply knowledge to the formulation of practical, macro-nutrient-optimized meal options. The research was conducted in two phases. The first phase was an exploratory study that involved an in-depth literature review to analyse existing knowledge on bulking and cutting methodologies, nutrient distribution, caloric needs, and common dietary patterns. This provided a scientific foundation for the development of customized macro meals suitable for each phase. The second phase was an experimental study involving the design and testing of various macro meal recipes. These recipes were tested and refined based on nutritional value, ease of preparation, taste, and user feedback. The study concluded that incorporating well-balanced macro meals tailored to individual bulking and cutting needs can significantly improve dietary adherence and overall health outcomes. Participants showed a positive response toward the



developed meals in terms of taste, nutritional satisfaction, and practicality. The findings support the importance of planning a structured meal in achieving fitness goals effectively.

Keywords: *Bulking, Cutting, Macro meals, Nutritional planning, Healthy lifestyle*

Introduction

The concepts of bulking and cutting are fundamental for achieving certain fitness objectives, especially within bodybuilding and strength training. Bulking generally refers to a deliberate increase in body mass by consuming more calories than the body requires, with an emphasis on muscle gain. On the other hand, cutting involves a calorie deficit aimed at reducing body fat while preserving lean muscle mass, often in preparation for competitive events or achieving a leaner appearance. Both phases necessitate precise dietary strategies, particularly in managing macronutrient intake—proteins, carbohydrates, and fats. Developing meals that are nutrient-dense and well-balanced in these macronutrients is key to achieving desired outcomes during these phases.



By understanding the body's unique requirements in bulking and cutting, individuals can fine-tune their nutrition to enhance performance, optimize recovery, and promote muscle growth or fat loss.

Motivation of the Study

The motivation behind this study stems from the growing popularity of fitness and bodybuilding cultures, where individuals often follow structured dietary phases—bulking and cutting—to achieve their body composition goals. This study seeks to bridge that gap by combining scientific nutritional principles with real-world meal development, aiming to support individuals in maintaining a healthy lifestyle while pursuing muscle gain or fat loss. By exploring and analyzing these eating habits and designing appropriate macro meals, the research aims to make dietary planning more efficient, effective, and sustainable. The study is motivated by the need to provide clear, practical solutions that improve dietary adherence, enhance nutritional quality, and support long-term health and fitness outcomes.

Literature Review

According to Kreider et al., (2021) Protein is critical during the cutting phase to help maintain lean muscle mass when in a calorie deficit. Without sufficient protein, the body may break down muscle tissue for energy, particularly when glycogen stores are low. Therefore, higher protein intake in the cutting phase is essential to preserve muscle mass.

According to Moro et al., (2021) Carbohydrates are the primary energy source for the body, and their intake varies between bulking and cutting. During bulking, carbohydrate intake is increased

to ensure muscles are well-stocked with glycogen, the stored form of carbohydrate that fuels high-intensity workouts. Carbohydrates also trigger insulin release, which aids nutrient delivery and muscle growth.

According to Volek et al., (2021) during bulking, fats contribute to the surplus of calories needed for muscle gain. During cutting, while fat intake is generally reduced to maintain a calorie deficit, it is still essential to ensure proper metabolic function and hormonal balance.

According to Mamerow et al., (2021) Timing meals can also be an effective strategy. Distributing protein-rich meals throughout the day, particularly after workouts, can enhance muscle protein synthesis.

According to Schoenfeld et al., (2022) Additionally, consuming a combination of protein and carbohydrates shortly after exercise helps replenish glycogen stores and supports muscle recovery, making nutrient timing an essential approach in both bulking and cutting.

Research Gaps

Lack of Practical Meal Planning Guidelines: Existing literature extensively covers macronutrient ratios and caloric needs, but there is limited practical guidance on how to translate this knowledge into everyday meal planning, particularly for non-professional athletes or fitness enthusiasts.

Limited Research on Macro Meal Development: There is a noticeable gap in studies focusing on the actual development, testing, and user evaluation of macro-balanced meals specifically designed for bulking and cutting phases.

Insufficient User-Centered Approaches: Most

research focuses on theoretical or clinical nutrition aspects. Few studies have assessed the real-world acceptance, satisfaction, and adherence to developed meals based on taste, convenience, and cultural preferences.

Generalization of Nutritional Needs: Many existing models for bulking and cutting diets are one-size-fits-all, lacking personalization based on individual goals, metabolism, or activity levels, which this study attempts to address.

Integration of Health with Performance: Research often prioritizes physical outcomes like muscle gain or fat loss without equally considering the long-term health impacts of diet patterns used during bulking and cutting.

Aim of the Study

To study bulking and cutting eating habits and development of macro meals.

Objectives

- To study the bulking and cutting eating habits.
- To develop macro meals for a healthy lifestyle.
- To analyze the acceptance of the developed macro meals.

Results and Discussions

Sl. No.	Response	Value
1	Overall acceptability of chicken shawarma rice bowl	97%
2	Overall acceptability of caramelized onion chicken rice bowl	91%

3	Overall acceptability of spicy garlic chicken rice bowl	95%
4	Overall acceptability of Grilled herb chicken and pasta bowl	90%
5	Overall acceptability of Palak aloo panner gravy rice bowl	80%

In the above table, it can be noted that chicken shawarma rice bowl has higher acceptability, and the Palak aloo paneer gravy rice bowl has less overall acceptability.

Conclusion and Future Scope

This study highlights the importance of structured and macronutrient-balanced meal planning in supporting the distinct nutritional needs of bulking and cutting phases. By understanding and applying targeted dietary strategies, individuals can effectively enhance muscle gain, support fat loss, and improve overall performance and recovery. The development of practical, nutrient-dense macro meals offers a sustainable approach to achieving fitness goals while maintaining a healthy lifestyle. Future Scope includes expanding the range of macro meal options tailored to various body types, activity levels, and dietary preferences.



Long-term studies can be conducted to evaluate the sustained impact of these meals on physical health and performance. Additionally, integrating cultural and regional food variations, as well as considering psychological factors such as eating behaviour and meal satisfaction, can make dietary strategies more inclusive and adaptable.

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Development of Healthy Beverage from Five Seeds

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Abstract

This study investigates the promising health benefits of a unique beverage crafted from a synergistic blend of five distinct seeds i.e., date, chia, flax, pumpkin, and sesame. Each seed contributes a unique nutritional profile: date seeds offer a wealth of antioxidants and dietary fiber, while chia and flax seeds are renowned for their high content of omega-3 fatty acids, crucial for cardiovascular well-being. Pumpkin and sesame seeds provide essential minerals like magnesium, zinc, and iron. The combined power of these seeds is hypothesized to create a balanced, wholesome drink capable of delivering a wide array of health advantages. This research thoroughly examines the individual nutritional contributions of each seed and explores the collective health impacts of their innovative combination. This study ultimately seeks to highlight the value of this natural beverage as a significant addition to a health-conscious lifestyle, addressing the rising consumer demand for nutritious and organic food choices.

Keywords: Flax seed, Chia seed, Sesame seed, Pumpkin seed, Date seed, Almond milk, Beverage, Brewing, ANOVA, Reliability test



Introduction

In today's health-conscious world, there's a growing demand for natural, nutritious beverages that go beyond simple hydration. This study explores the exciting potential of a unique drink crafted from a powerful blend of five nutrient-rich seeds: date, chia, flax, pumpkin, and sesame. Each of these seeds brings its own set of impressive health benefits. Date seeds, for instance, offer a sustainable, caffeine-free source of antioxidants and vital dietary fiber. Chia and flax seeds are renowned for their high concentration of omega-3 fatty acids, known to support cardiovascular health and reduce inflammation. Meanwhile, pumpkin and sesame seeds provide essential minerals like magnesium, zinc, and iron, crucial for overall well-being. By combining these diverse seeds, we aim to create a beverage that's not only balanced and flavorful but also packed with health-promoting properties. This study delves into existing scientific research, including studies on date seeds as a functional beverage base, to highlight why this innovative five-seed fusion could be a natural, wholesome alternative to conventional drinks, perfectly aligning with a healthier lifestyle.

Motivation of the Study

In response to a surging consumer demand for nutrient-rich, natural alternatives to conventional beverages, this study is driven by the escalating

global health consciousness. Today's consumers are actively seeking drink options free from caffeine and artificial additives, aligning with a more holistic approach to well-being. The researchers' motivation stems from the unique opportunity to harness the individual and synergistic nutritional strengths of five distinct seeds: date, chia, flax, pumpkin, and sesame. The researchers aim to formulate a beverage that is not only balanced and functional but also innovative. A key aspect of this research involves exploring the untapped potential of date seeds, which are often discarded as agricultural waste. By demonstrating their value as a core ingredient in health-oriented beverages, we hope to transform a commonly overlooked byproduct into a valuable component of sustainable and nutritious food systems.

Literature Review

According to Moses Nijoka and Peter Masinde (2024) highlights the potential and challenges of chia production in Kenya. While chia is gaining popularity due to its nutritional benefits and adaptability to the Kenyan climate, farmers face several difficulties. These include limited knowledge about suitable chia varieties, poor-quality seeds, inadequate pest and weed management, and a lack of proper storage and harvesting techniques. Additionally, there is minimal government support and insufficient research to guide best farming practices. The authors stress the need for further research to evaluate different chia varieties and improve farming methods, which could significantly boost chia production in Kenya.

The study of Pramanik, Kumar, and Prajapati (2023), examines the nutritional composition and medicinal applications of flax seeds. Rich in omega-3 fatty acids, flax seeds are known to

lower cholesterol, control hyperglycemia, and exhibit anti-inflammatory effects. The study highlights their potential benefits for gut and skin health, as well as in reducing cancer risk. Through a literature review and biochemical analysis, the authors emphasize the value of flax seeds in health and nutrition. However, they also noted that the complex composition and interactions of flaxseed compounds require further research to fully understand any potential adverse effects.

According to Holzle and Nicole Klass (2024), the impact of chia and flax seeds on acrylamide formation in sweet bakery products, particularly cookies, needs to be investigated. Using roasted seeds at varying temperatures and analyzing them with advanced equipment, the researchers found that acrylamide levels increase when seeds are roasted at moderate temperatures (around 160°C), especially in milled or crushed forms, due to increased surface area. Milled flaxseeds, in particular, showed higher acrylamide content. The study emphasizes that both seed type and processing method significantly influence acrylamide levels. To reduce acrylamide in chia and flaxseed products, the researchers suggest exploring seed compounds, modifying sugar types and pH level in dough, using different seed formats, and testing hydration effects.

Polyzos et al., (2024), explored the chemical, nutritional, and bioactive properties of *Cucurbita maxima* (pumpkin) seeds and their byproducts for food industry applications. Using methods such as in vitro tests for cytotoxicity, antibacterial, and antioxidant activity, the research revealed that both seeds and seed cakes are rich in γ -tocopherol and possess strong antioxidant and antibacterial properties. The study supports the potential of pumpkin seed byproducts as a valuable, nutrient-rich ingredients in a

circular economy. However, it also notes that environmental and genetic variations can affect phytochemical content, and technological challenges may limit full utilization.

Bedi and Tewari (2024), examined the nutritional composition, bioactive compounds, and health benefits of pumpkin seeds for both culinary and therapeutic uses. The study highlights that pumpkin seeds are rich in fatty acids, phytosterols, and tocopherols, and possess anticancer, antihypertensive, antidiabetic, and antioxidant properties. Despite variations in findings due to different methods, environments, and seed varieties, the review emphasizes the significant potential of pumpkin seeds as a functional food and calls for further research to understand their dietary applications and nutritional value.



Lin et al., (2024), explored the protein content and bioactive peptides in pumpkin seeds (*Cucurbita maxima*), focusing on their health-promoting properties, especially enzyme inhibition. Using *in silico* prediction, proteomics, and enzymatic hydrolysis, the research identifies peptides with strong DPP-IV and ACE inhibitory effects, indicating potential benefits for blood pressure and glucose regulation. These bioactive peptides may serve as stable functional dietary components for gastrointestinal health and nutraceutical applications. However, further *in vivo* studies are needed to confirm their safety and medicinal efficacy.

The study of Manshi and Chaturvedi (2023) provides a comprehensive review of the pharmacological activities of pumpkin seeds, highlighting their rich content of unsaturated fatty acids, phenolic compounds, and minerals. The study emphasizes the seeds' potential health benefits, including anti-cancer, anti-diabetic, and antioxidant effects. Although pumpkin seeds are often discarded as waste, they show significant promise as a functional food. The findings are based on preclinical and *in vitro* studies, with a call for more human clinical trials to confirm their therapeutic effects.

Silky, Bisla, and Srishti (2024) provide a comprehensive review of the pharmacological and therapeutic properties of pumpkin seeds, focusing on their antioxidant, anti-inflammatory, antihyperlipidemic, anticancer, and antidiabetic effects. The study highlights the seeds' potential benefits for neurological health and their promising use in medications and nutraceuticals. While current findings are based largely on preclinical research, the authors stress the need for more clinical trials to confirm the efficacy of pumpkin seeds in disease prevention and treatment According to Ihsanullah Manzoor, Ali



Shekh Kaleri et al., (2023), studied the effect of different nitrogen levels on the growth and yield of sesame in Pakistan using a randomized complete block design at Sindh Agricultural University, Tandojam. Nitrogen treatments included 0 (control), 45, 50, and 55 kg/ha, with results showing that increased nitrogen significantly improved plant height, branches per plant, and seed yield. The highest yield was recorded at 55 kg/ha, suggesting it as the optimal level for sesame cultivation. However, the study was limited to a single variety (S-17) in one location and did not evaluate environmental impacts, indicating the need for broader trials across different conditions and varieties to confirm these findings. As per the study of Mostashari and Khaneghah (2024) reviewed the health benefits of sesame seeds, highlighting their rich content of lignans, phytosterols, and polyunsaturated fatty acids that support heart health, antioxidant activity, and cancer prevention. Despite their nutritional value, the study notes limited clinical trials and calls for more research on processing methods and long-term health effects.

Research Gap

While extensive research exists on the individual nutritional and functional properties of flax, chia, pumpkin, sesame, and date seeds, a significant gap remains in understanding their synergistic potential when combined. Currently, there's limited research exploring the co-application of all five seeds, particularly in the form of a single, palatable beverage. This project directly addresses this gap by aiming to formulate and evaluate a novel five-seed infused beverage. Our goal is to create a practical and enjoyable drink suitable for daily consumption, one that effectively leverages the comprehensive nutritional benefits of all five seeds in a unified product.

Aim of the Study

To investigate the unexplored benefits of the seeds like date seeds, flax seeds, sesame seeds, pumpkin seeds and chia seeds, adding a healthy variant for the ready to drink beverages market.

Objectives

To develop and optimize a novel beverage formulated from a blend of five nutrient-rich seeds: date, chia, flax, pumpkin, and sesame.



To analyze consumer acceptance of the developed beverage, assessing its sensory attributes and overall market potential.

To examine the comprehensive nutritional value of the final beverage product, quantifying its beneficial components.

Results and Discussions

Sl. No.	Response	Value
1.	FSF 1	85.78%
2.	FSF 2	89.11%

In the above table, it can be noted that the research confirms a strong preference for Five Seeds Fusion variant 2 (FSF 2)

Conclusions and Future Scope

The "Five Seeds Fusion" project successfully demonstrated the potential of creating a nutritious and palatable infused beverage from a blend of date, chia, sesame, flax, and pumpkin seeds. Through rigorous formulation, sensory evaluation, and nutritional analysis, the identified FSF 2 with almond milk as the optimal variation excels in both consumer acceptance and nutritional profile. This initiative not only met all project objectives but also provided invaluable practical experience in food product development, underscoring the significant functional benefits of seed-based ingredients for health-conscious beverages within an academic setting. Future studies on other variations can be undertaken.

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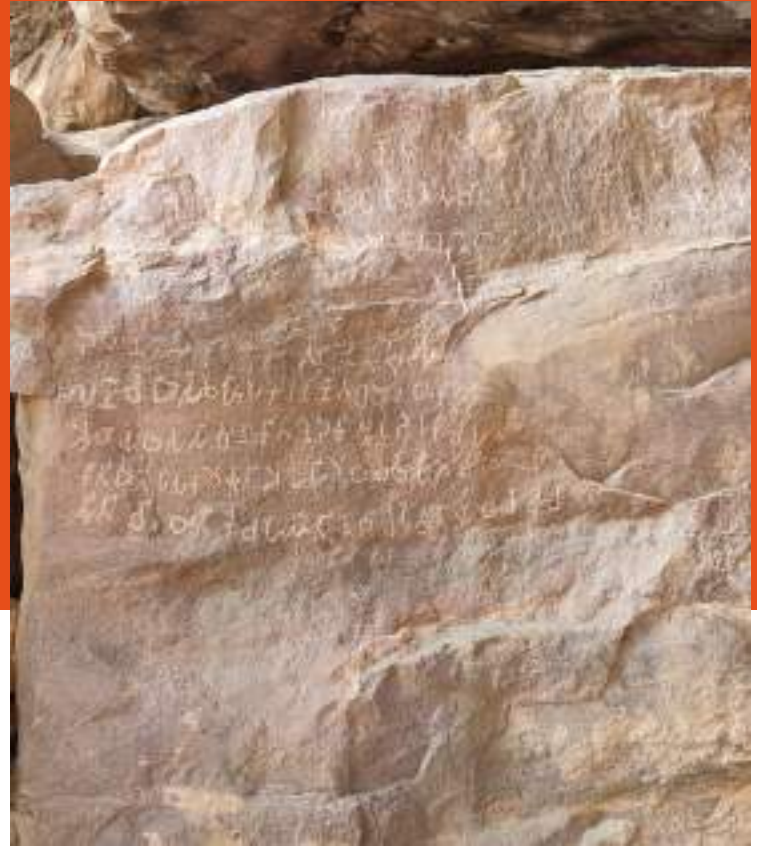
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Development of Promotional Tools for Promoting Religious Tourism in **Salkanpur, Madhya Pradesh**

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Abstract

The project titled “Development of Promotional Tools to Promote Religious Tourism in Salkanpur, Madhya Pradesh” aims to identify under-recognized religious destinations in Salkanpur and enhance their visibility through strategic digital promotion. With India being a prominent religious tourism hub, the study focuses on positioning Salkanpur which is home to significant yet underpromoted sites like the Bijasan Mata Temple as a key spiritual destination. The objectives include identifying religious sites, analyzing visitor challenges and opportunities, and developing cost-effective promotional tools. A mixed methodology was adopted. Descriptive field studies and surveys were conducted to gather primary data, while digital tools such as Instagram reels, YouTube shorts, Facebook posts, and a dedicated tourism website were developed as part of the experimental approach. The project used convenience sampling with over 150 respondents, employing statistical analysis including Likert scales and chi-square tests to understand trends and perceptions. Key insights revealed high satisfaction with hospitality but concerns over cleanliness and security. Instagram and YouTube emerged as preferred



promotional platforms. Importantly, awareness of sites like the Saru Maru Buddhist Monastery was statistically correlated with stronger belief in Salkanpur’s tourism potential. The project successfully identified culturally rich religious sites and crafted implementable promotional strategies, combining academic insight with practical field applications.

Keywords: *Religious Tourism, Salkanpur, Digital Promotion, Destination Branding, Tourism Strategy.*

Introduction

Religious tourism is a vital segment of the global travel industry, drawing millions of visitors to sacred sites each year for spiritual enrichment, cultural exploration, and historical learning. According to Tomljenović and Dukić (2017), religious tourism has emerged as one of the fastest-growing tourism categories globally, with an estimated 300–330 million people visiting major religious sites annually.



India, with its diverse religious landscape, is uniquely positioned to benefit from this form of tourism. The country hosts numerous pilgrimage destinations such as Varanasi, Haridwar, and Ujjain, which attract both domestic and international visitors (Shinde, 2007).

Despite this, many culturally significant towns like Salkanpur in Madhya Pradesh remain underdeveloped and underrepresented in the tourism ecosystem. As noted by Pandey, Mishra, and Shukla (2014), Madhya Pradesh contributes a relatively small percentage to India's overall tourist traffic despite its cultural wealth, largely due to weak promotional infrastructure. Salkanpur, which houses the revered Bijasan Mata Temple, holds immense potential as a religious destination, particularly during festivals like Navratri. However, limited digital presence, infrastructural challenges, and lack of strategic marketing have stifled its visibility and growth.

In today's digital era, platforms such as Instagram, YouTube, and dedicated websites can play a transformative role in destination marketing. As Gohil (2015) argues, social media has become central to tourism promotion, influencing travel decisions and increasing destination reach. This project explores how digital promotional tools can be developed and

implemented to brand Salkanpur as a prominent religious tourism hub, thereby contributing to both cultural preservation and economic development.

Motivation of the study

The primary motivation behind this study stems from the noticeable gap in the promotion and development of lesser-known religious tourism destinations in India, specifically in towns like Salkanpur. While major religious centers such as Varanasi, Haridwar, and Tirupati receive substantial attention and resources, smaller yet culturally significant sites remain overshadowed. According to Pandey, Mishra, and Shukla (2014), Madhya Pradesh, despite its rich spiritual heritage, contributes only marginally to India's total tourist traffic due to underdeveloped marketing and infrastructure strategies.

Salkanpur, located in the Sehore district and home to the Bijasan Mata Temple, is a key example of a spiritually rich but under-promoted destination. The temple attracts thousands of devotees during Navratri, yet it lacks structured tourism facilities and digital visibility. This observation aligns with the view of Shinde (2007), who emphasizes that while religious tourism strengthens cultural identity and

supports local economies, it often lacks strategic focus in non-urban regions.

The purpose of this study is to bridge this visibility gap by developing targeted digital promotional tools to brand Salkanpur as a religious tourism destination. As Gohil (2015) highlights, the use of social media platforms and websites can significantly increase public awareness and influence travel behavior. By combining fieldwork with digital content creation, this research aims to offer a practical model for enhancing tourism in under-recognized spiritual sites.

Literature Review

Religious tourism has been extensively studied as a culturally, economically, and socially significant form of travel. The reviewed literature highlights both global trends and regional case studies that are highly relevant to the present study on promoting tourism in Salkanpur, Madhya Pradesh.

Tomljenović and Dukić (2017) describe religious tourism as one of the fastest-growing segments of global tourism, attracting millions of pilgrims annually. However, they caution that its increasing commercialization risks reducing spiritual experiences to mere commodities. This insight is relevant to the current study's aim of promoting Salkanpur while preserving its religious sanctity and cultural authenticity.



In the Indian context, Shinde (2007) argues that religious tourism serves as a tool for cultural continuity and economic development, especially in rural areas. This supports the rationale for selecting Salkanpur, a lesser known but spiritually significant location, as the focal point of this project.

Pandey, Mishra, and Shukla (2014) note that although Madhya Pradesh holds substantial religious and cultural significance, it contributes less than 3% to national tourist traffic due to poor promotional infrastructure. This observation underscores the urgent need for strategic marketing initiatives, such as the digital tools developed in this study.

According to the study of Gohil (2015) provides evidence that social media campaigns significantly increased tourist inflow in Madhya Pradesh through initiatives like "Hindustan ka Dil Dekho", proving the effectiveness of digital marketing in enhancing destination visibility. Similarly, as per the study from Xiang and Gretzel (2010) emphasize how online platforms have become essential sources of travel information, especially among younger tourists.

Furthermore, the study form Timothy and Boyd (2003) stress the importance of community involvement in religious tourism development. Their perspective aligns with this study's approach, which includes collaboration with local

stakeholders like temple authorities and business owners to ensure sustainable growth. Collectively, these studies validate the need for a digital-first, culturally sensitive, and community-driven approach to promote underrepresented religious destinations like Salkanpur.

Research Gaps

Despite the growing interest in religious tourism and its contributions to local economies and cultural preservation, the existing body of research tends to prioritize well-known pilgrimage centers while overlooking smaller, culturally significant destinations like Salkanpur. There is a limited academic literature focused specifically on Salkanpur despite its historical and spiritual importance. Moreover, much of the existing research fails to explore the role of digital promotional tools such as social media, video content, and destination-specific websites in promoting such lesser-known sites. The other challenge is the lack of focus on community involvement in tourism promotion. Additionally, there is a notable scarcity of

empirical research that combines on-ground fieldwork with the practical application of promotional materials. Most studies remain theoretical and do not integrate real-time content creation or digital tool implementation. This study aims to address these gaps by identifying religious sites in Salkanpur, understanding challenges and opportunities through field surveys and observations, and developing digital promotional tools tailored to real user behavior. In doing so, it not only contributes to academic discourse but also offers actionable solutions for religious tourism development in emerging spiritual destinations.

Aim of the study

The aim of this study is to identify the religious tourist destinations in Salkanpur, Madhya Pradesh, and develop effective promotional tools to enhance their visibility and attractiveness. By leveraging digital media platforms and community engagement, the study seeks to position Salkanpur as a significant religious tourism destination, thereby contributing to local cultural preservation and economic development.



Objectives

- Objective 1: To identify the religious tourist destinations in Salkanpur town, located in the Sehore district of Madhya Pradesh.
- Objective 2: To examine the challenges and opportunities faced by travelers visiting the identified religious destinations in Salkanpur.
- Objective 3: To develop digital promotional tools and travel packages aimed at branding Salkanpur as a religious tourism destination.

Results and Discussions

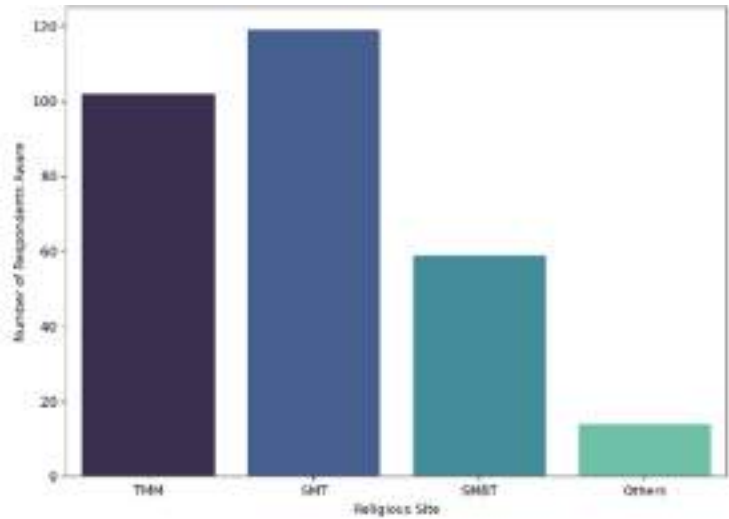


Figure: Recognised Religious Sites

In the above figure it can be noted that the Salkanpur Mata Temple (SMT) emerged as the most recognized religious site, with 119 respondents identifying it, which indicates that this temple is the primary spiritual attraction in Salkanpur. However, the ancient Shiva temple (others) is known by only 14 people, suggesting that lesser-known temples receive less attention. Hence, there is a need for more inclusive promotion of religious sites.

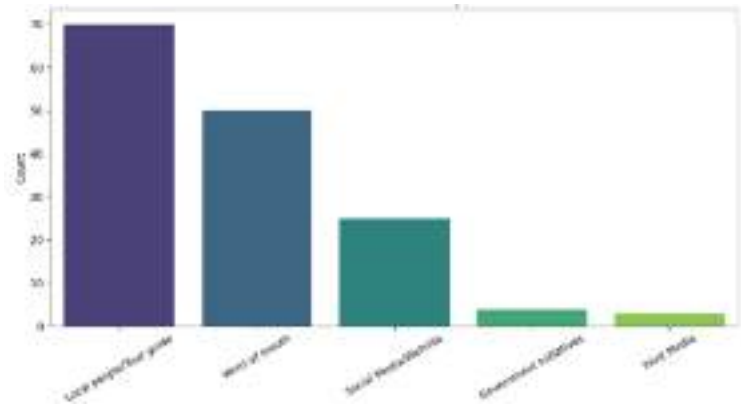


Figure: Source of Awareness about Salkanpur

In the above figure, local people and tour guides were reported as the primary source of awareness, with 70 responses. This suggests that on-the-ground interactions and first-hand recommendations play a major role in attracting visitors. Word of mouth is responded by 50 tourists, showing the influence of informal communities. In contrast, only 25 tourists mentioned Social Media or Websites, indicating that digital platforms are underutilized as a source of information about Salkanpur.

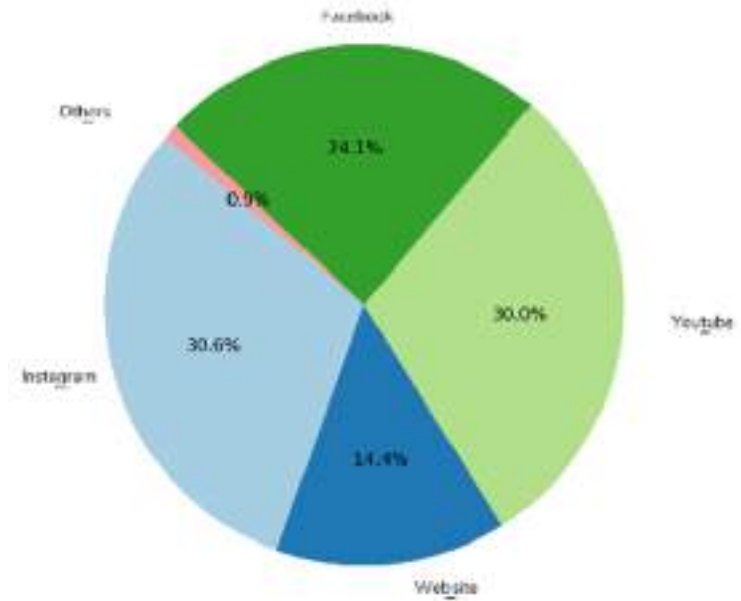


Figure: Preferred Digital Platforms for Promotion

Among digital platforms, Instagram 30.6% was the most preferred for tourism promotion, followed closely by YouTube at 30.0%,

highlighting a strong preference for visually engaging and interactive content among the target audience. Facebook also shows significant traction at 24.1%, indicating that static or informational content has a more limited yet notable reach. Other platforms account for just 0.9%, suggesting minimal reliance on alternative or niche channels.

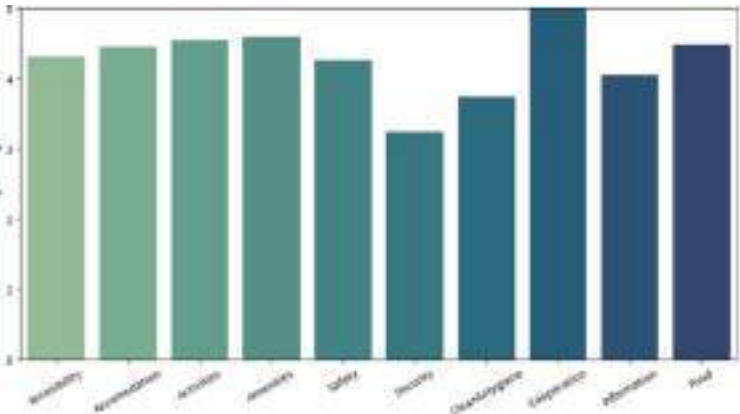


Figure: Average Rating Across Categories of Tourism Aspect

The figure above it shows that the highest rated aspect of the tourism experience was Local Cooperation - 5.0, suggesting strong community hospitality and support for visitors. Conversely, Security - 3.25 and Clean & Hygiene - 3.75 received the lowest score, signaling a need for infrastructural and administrative improvements. These results highlight specific operational gaps that could undermine visitor perception and safety if not addressed.

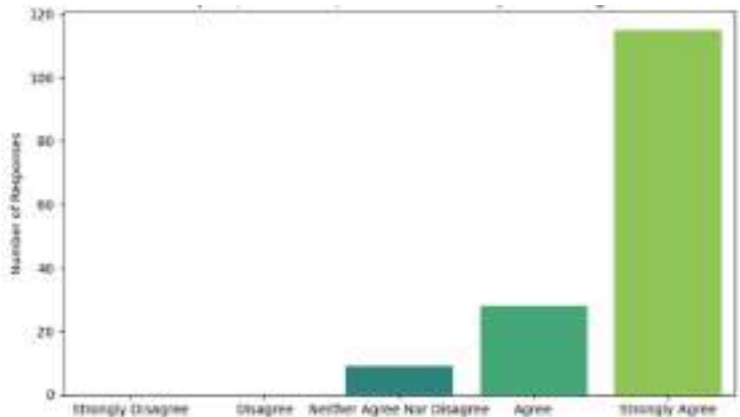


Figure: Awareness of Religious Sites in Salkanpur

In the figure above, a notable 115 respondents strongly agree that Salkanpur has tourism potential, 76.7% and importantly, none of the respondents expressed disagreement which fulfills the Alternate Hypothesis (H_1) stating that "There is a significant potential for Salkanpur to be promoted as a religious tourism destination". This public sentiment is a compelling signal for policymakers and tourism planners to invest in infrastructure, awareness campaigns, and service quality.

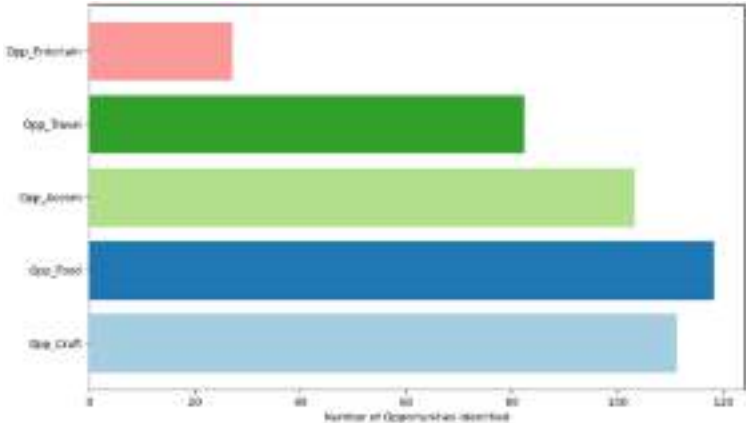


Figure: Opportunities Identified for Development by Sector

In the figure above, the Food Sector was identified as the most promising area for development with 118 responses, followed closely by handicrafts with 112 responses and Accommodation with 104 responses. Entertainment lags significantly behind with only 32 opportunities, underscoring a gap in recreational offerings. These findings present a roadmap for targeted interventions, particularly by investing in food experiences, artisanal markets, and guest accommodations.

Figure: Awareness of Religious Site and Belief

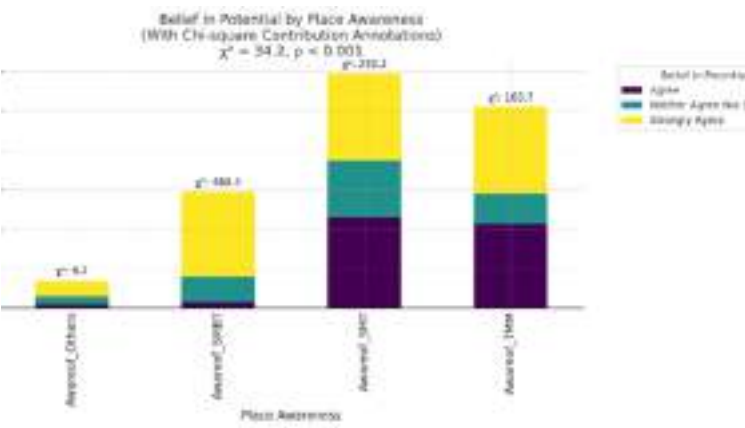


Table (Chi-Square): Awareness of Religious Site and Belief

Parameter	Value
Chi-square statistic	0.000006

The chart illustrates a Statistically Significant Relationship Between Awareness of Religious Sites Within Salkanpur and Belief in Salkanpur’s Overall Potential, as evidenced by the chi-square test result ($\chi^2 = 34.2, p < 0.001$). This finding suggests that an individual's belief in the potential of Salkanpur is meaningfully associated with their awareness of certain landmark locations within the town.

If stakeholders wish to promote Salkanpur as a destination for development, tourism, or cultural interest, a strategic focus on highlighting and improving visibility around its most impactful sites, like the ancient Shiva temple, Tapkeshwar Mahadev Temple and Saru Maru Buddhist Monastery, would likely be an effective starting path.

Conclusions and Future Scope

The study concluded that Salkanpur holds significant untapped potential as a religious tourism destination, with sites like the Salkanpur

Mata Temple and Saru Maru Buddhist Monastery emerging as key attractions. Analysis of responses revealed that while local cooperation and basic amenities were rated highly critical issues such as security and cleanliness require improvement. Social media especially Instagram and YouTube, were identified as the most effective channels for promotion, aligning with the digital habits of the target demographic.

One of the most notable findings was the statistically significant correlation between awareness of specific religious sites and belief in Salkanpur’s tourism potential. This highlights the importance of increasing visibility through structured promotional efforts. Additionally, a strong willingness among respondents to recommend Salkanpur suggests high visitor satisfaction and advocacy potential.

The relevance of these results lies in their practical implications: digital promotional tools not only raise awareness but also influence travel decisions. The study’s success in implementing low-cost, scalable promotional strategies provides a replicable framework for similar towns across India that lack visibility despite having cultural and spiritual value.



Suggestions for Future research: There is scope to expand promotional initiatives across all identified sites, incorporate real-time analytics to measure campaign effectiveness, and explore the economic impact on the local community. Further studies could also assess long-term visitor satisfaction and develop strategies for integrating sustainable and inclusive tourism practices.

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ALUMNI SPEAKS

JUNAID RIZVI

BATCH 2003-2007

*Sous Chef, Hotel Rydges South Park,
Adelaide*

**Please tell us about your professional journey
and experiences**

My professional journey has been an exciting and transformative experience, filled with diverse opportunities and continuous growth. I began my career by specializing in cookery with the goal of becoming a chef. After gaining initial experience at a few hotels and restaurants, I briefly explored a role in marketing before returning to my true passion, culinary arts.

In 2008, I joined The Leela Hotels as a Kitchen Executive Trainee, where I underwent intensive and structured training. This position gave me the opportunity to work across several Leela properties throughout India, allowing me to refine my skills and develop both personally and professionally. During this time, I had the privilege of working with many renowned and celebrity chefs from around the world, including Chef Kunal Kapur, to whom I reported directly. I supported him in the development of his first cookbook and television shows, gaining valuable exposure to the creative and media aspects of the culinary industry.

In 2016, I took a significant step forward by migrating to Australia. Since then, I have worked with a variety of esteemed wineries, cafés, pubs, and restaurants.



I am currently employed at Hotel Rydges in Adelaide, South Australia, where I serve as the Second in Charge in the kitchen.

Over the years, I have developed and refined a wide range of professional skills, including time management, team coordination, adaptability, multitasking, managerial leadership, guest engagement, and complaint resolution. I remain passionate about learning and am continually striving to grow both as a chef and as a professional.

Looking back, what aspect of your college life do you value the most, and how has it shaped who you are today?

My college days remain some of the most cherished and golden memories of my life. I often relive those moments by staying in touch with my batchmates, seniors, and juniors even to this day. I came to Bangalore and joined college with big dreams and high hopes for a bright future. The guidance and support of my lecturers set me on the right path to success, and I was fortunate to be surrounded by encouraging friends and seniors. From late-night ODCs and project deadlines to completing journals and preparing for exams, college life groomed me to handle pressure, make sound decisions, and become more resilient. Those experiences helped shape both my personal and professional life. It was during this time that I gained the confidence to pursue my goals with conviction. Along the way, I met incredible batchmates, seniors, and juniors many of whom became lifelong friends. Their constant support and guidance, through both ups and downs, continue to be a valuable part of my journey.

If you could give one message or piece of advice to your juniors, what would it be to help them grow both personally and professionally during college?

Live and cherish every moment in the best and most meaningful way you can.

Stay focused on your goals.

Be determined.

Be respectful.

Be realistic.

Be patient.

Embrace every opportunity that comes your way and make the most of what you have. Never lose hope and never lose confidence in yourself. You are destined to shine, maybe not today, maybe not tomorrow, but your moment will surely come.

Keep your spirits high, stay persistent, and continue moving forward. Success will find you, it's only a matter of time.



Latesh Kumari (Batch 2006-2010)

Founder of "Sanskriti"- The Cloud Kitchen
And
Marathon Runner

Please tell us about your professional journey and experiences

Looking back, my career has been nothing short of a remarkable journey, spanning diverse industries with evolving roles. I began working in hospitality and banking, explored the domains of HR and administration, and eventually ventured into IT. Each chapter brought unique challenges and invaluable lessons.

A standout phase was managing procurement at DASKIT, where I oversaw thousands of software licenses and coordinated pan-India installations. That experience honed my multitasking abilities, sharpened my negotiation and vendor management skills, and taught me the art of transforming complex workflows into streamlined systems. From facility management to large-scale event coordination, every role reinforced the importance of adaptability, resilience, and building efficient processes.

Today, my journey has taken a meaningful new turn. Now, I run Sanskriti, a cloud kitchen initiative, while also dedicating time to teach children in a village community. Also, I have taken up running marathons across India and proudly embrace the role of a homemaker, raising my twin babies. It's a life full of purpose, challenges, and quiet victories, where every bit is as rewarding as any corporate milestone.

Could you share a memorable experience from your college years?

College will always hold a special place in my heart. My college years were more than just academics; they were a time of exploration, self-discovery, and growth. From the buzz of group assignments and lively classroom debates to

the adrenaline of 'Entrepreneur Idol' competitions, every moment was packed with energy and learning. But beyond that, it was the quieter experiences, forming deep friendships, discovering my voice, and overcoming personal hurdles, that truly left a mark. The hands-on training, team projects, and real-time problem-solving exercises built the foundation for everything I've achieved professionally. And of course, I'll always cherish the joy of late-night ODCs and celebratory dinners with friends. Those years shaped not just my career, but my character.

What message or piece of advice would you like to share with your juniors as they navigate their academic and professional journey?

Congratulations on embarking on one of the most exciting chapters of your life! You are in a space brimming with opportunities to explore, experiment, and evolve. Don't be afraid to take bold steps or make mistakes; every setback is a setup for a comeback. Be curious, stay grounded, and believe in your potential. These are the years where you'll build not just your career path, but the mindset that will carry you through life. You're already doing great, keep going strong and keep shining.

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