

# Bridging Disciplines: Integrating Technology, Entrepreneurship, and Sustainability in Hospitality Education

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**Abstract:** The rapid evolution of the hospitality industry necessitates a forward-thinking approach to education that integrates technology, entrepreneurship, and sustainability. This study explores how the intersection of these three disciplines can create a future-ready hospitality curriculum in the Indian context. Through a comprehensive literature review and analysis of industry perspectives, this research examines how digital transformation, entrepreneurial mind-set development and sustainable business practices contribute to industry-aligned education, enhancing students' competencies and employability.

**Methodology:** This research adopts a qualitative approach utilising a comprehensive literature review to examine the integration of technology, entrepreneurship, and sustainability in hospitality education. The systematic literature review was synthesised through Preferred Reporting Items for Systematic Review and meta-analysis protocols (PRISMA, 2020; Page et al., 2021) for its rigour. Reflective thematic analysis was used to analyse the chosen articles in line with Braun and Clarke's (2006) six-phase framework, demonstrating systematic progression from familiarisation to final theme, an inductive coding approach was used, whereby initial codes were generated through repeated reading of the texts. Related codes were then organised into sub-themes and refined into four primary themes through an iterative process of review and comparison.

**Findings:** The study examined existing literature to develop a framework and practical recommendations for curriculum enhancement. The findings reveal that a multidisciplinary approach significantly improves graduate preparedness for contemporary hospitality challenges; it further proposes a structured framework for embedding these critical elements within hospitality education and provides strategic recommendations for higher education hospitality institutions in India.

**Research Implications:** The proposed framework offers a structured approach to curriculum integration that maintains core hospitality competencies while enhancing technological proficiency, entrepreneurial mind-set development, and sustainability awareness. The phased implementation strategy provides a practical roadmap for institutions seeking to modernise their hospitality programs and serve industry needs better.

**Originality/Value:** The future success of India's hospitality sector depends significantly on the quality and relevance of educational preparation provided to future professionals. By bridging these critical disciplines, educational institutions can contribute to industry growth, innovation, and sustainability while enhancing graduate career prospects and professional development opportunities...

**Keywords:** Hospitality Education, Interdisciplinary Learning, Technology Integration, Entrepreneurship, Sustainability..

## Introduction

The hospitality industry in India has undergone an unprecedented transformation over the past decade, driven by digitalisation, changing consumer preferences, and increasing environmental consciousness (Kumar, 2018). This evolution has created a significant gap between traditional hospitality education approaches and the competencies required by contemporary industry demands. The COVID-19 pandemic further accelerated these changes, highlighting the critical need for graduates who possess technological fluency, entrepreneurial adaptability, and sustainability awareness (Baum et al., 2020). Traditional hospitality education models, primarily focused on operational skills and service excellence, are increasingly insufficient to meet the complex challenges of modern hospitality businesses (Airey & Tribe, 2005). The emergence of digital technologies such as artificial intelligence, IoT, and block chain, coupled with growing emphasis on sustainable practices and entrepreneurial innovation, demands a fundamental reimagining of hospitality curricula (Buhalis & Leung, 2018).

India's hospitality sector, valued at approximately \$247 billion in 2019 and projected to reach \$492 billion by 2028, represents a significant economic contributor requiring skilled professionals equipped with future-ready competencies (IBEF, 2023). The hotel industry alone, which forms the backbone of India's hospitality sector, comprises over 40,000 classified rooms and is expected to witness a compound annual growth rate of 11.5% through 2030 (JLL Hotels & Hospitality, 2023). However, research indicates substantial gaps between academic preparation and industry expectations, particularly in areas of technological proficiency, entrepreneurial thinking, and sustainable business practices (Syed, 2018).

This study addresses these challenges by proposing an integrated approach to hospitality education that bridges technology, entrepreneurship, and sustainability disciplines. The research contributes to existing scholarship by providing a comprehensive framework specifically tailored to the Indian hospitality education context, offering practical recommendations for curriculum enhancement and strategic implementation. The rapid evolution of the hospitality industry necessitates a forward-thinking approach to education that integrates technology, entrepreneurship, and sustainability. This study explores how the intersection of these three disciplines can create a future-ready hospitality curriculum in the Indian context. Through a comprehensive literature review and analysis of industry perspectives, this research examines how digital transformation, entrepreneurial mind-set development, and sustainable business practices contribute to industry-aligned education, enhancing students' competencies and employability.

## Literature Review

### Evolution of Hospitality Education

Hospitality education has evolved significantly from its origins in vocational training to contemporary academic programs offering specialised degrees (Morrison & O'Mahony, 2003). Early hospitality programs focused primarily on operational skills, emphasising practical training in food service, accommodation management, and guest relations (Hampton, 2004). From an Indian hospitality education point of view, inadequate modern infrastructure and gap between the industry requirement and education amongst the major hospitality institute remains the main concern for employability. The primary focus of the curriculum is very old and focusses more on operational subjects, which is largely preparing the students to fill the entry level positions in hospitality industry, as a result, majority of the

institutes are not able to impart management education amongst the hospitality graduates and the same is reflected during the time of placement drive. The student also focuses more on achieving higher grades in the final assessments and hence focuses shifts from getting ready for the industry to scoring well. The concept of applied learning and hands on training especially for hospitality education has helped getting better placement, however, applied learning has to be equally backed up by the well-structured and updated theory content, incorporating case studies from the industry is helpful in understanding the problems from the industry and hence improve decision making of the students. However, the increasing complexities of hospitality operations and the industry's recognition as a legitimate field of academic study have led to more sophisticated educational approaches.

Contemporary hospitality education encompasses multiple disciplines, including business management, marketing, human resources, and operations management (Lashley, 2004). The integration of theoretical frameworks with practical applications has become a hallmark of effective hospitality programs, preparing graduates for diverse career paths within the industry (Tribe, 2002).

## Technology Integration in Hospitality Education

The digital transformation of the hospitality industry has necessitated corresponding changes in educational approaches (Buhalis & Leung, 2018). Technology integration in hospitality education encompasses multiple dimensions, including the use of educational technologies in teaching delivery and the incorporation of industry-relevant technological competencies in curricula (Law et al., 2019). Recent studies highlight the importance of preparing students for technology-driven hospitality environments (Neuhofer et al., 2015). Key technological areas requiring educational attention include property management systems, customer relationship management platforms, revenue management software, and emerging technologies such as artificial intelligence and machine learning applications (Ivanov et al., 2019).

The COVID-19 pandemic significantly accelerated technology adoption in hospitality operations, creating urgent demand for graduates with technological proficiency (Baum et al., 2020). As the hospitality industry sees digital transformation, the institutes need to adapt to the changing environment, for instance robotic technology is used in the hospitality industry for service and point of sales. In the food production and storage processes, the robots are used to disinfect through UV lights as it results in deactivating bacteria's and viruses, these services are increasingly becoming common in airports and hotels worldwide. In the front of the house, robots assist staff in the pre-set sequence of service, especially in concierge services like greeting the guest, assisting them in the room delivery. Alongside robots, technology like AI driven chat bots assist guests through live chat. The concept of virtual field trip is often useful in enhancing the learning experiences of the students, especially on the food and beverage aspects on the hospitality education. The virtual field trip will complement the face to face delivery of the students on campus, it give real life experience without compromising on the theoretical inputs on imparted at the institute level, on the contrary digital technologies are rarely incorporated in the hospitality education. Research indicates that hospitality programs integrating technology education demonstrate improved graduate employability and industry relevance (Kim et al., 2013).

## Entrepreneurship in Hospitality Education

Entrepreneurship education has gained prominence in hospitality curricula as the industry increasingly values innovation, adaptability, and business creation capabilities (Thomas et al., 2011).

The hospitality sector's entrepreneurial nature, characterised by numerous small and medium enterprises, makes entrepreneurial competencies particularly relevant for graduates (Morrison et al., 2009). Effective entrepreneurship education in hospitality contexts involves developing creativity, risk assessment capabilities, opportunity recognition skills, and business planning competencies (Stokes, 2000). Research demonstrates that hospitality students exposed to entrepreneurship education show enhanced innovative thinking and improved business acumen (Bosworth & Farrell, 2011). The integration of entrepreneurship education also addresses the industry's need for entrepreneurial skills within established organisations, enabling graduates to drive innovation and adaptation within existing hospitality businesses (Antonicic & Hisrich, 2003). Design thinking is another dimension that has emerged as a favourable subject to add on to the entrepreneurial education, students have found adding design thinking to entrepreneurial education adds value and is very engaging, they emphasised on its importance in developing skill and enhancing knowledge. This new dimension adds better understanding of commercialisation of technology and its use in the entrepreneurial journey. Along with developing the personal; design thinking being tangential in nature; it also enhances other skills like team work, empathy, professional networking and interpersonal communication.

## Sustainability in Hospitality Education

Sustainability has emerged as a critical component of hospitality education, reflecting growing environmental consciousness and regulatory requirements (Bohdanowicz, 2005). Hospitality programs increasingly incorporate environmental management, social responsibility, and economic sustainability concepts into their curricula (Sheldon et al., 2011). Effective sustainability education in hospitality encompasses multiple dimensions, including environmental impact assessment, sustainable resource management, community engagement, and ethical business practices (Cavagnaro & Curiel, 2012). Research indicates that graduates with sustainability competencies demonstrate enhanced problem-solving abilities and improved long-term thinking capabilities (Legrand et al., 2013).

When it comes to sustainability education or awareness, the focus is more towards environment sustainability, however, hospitality sustainability education needs to be beyond only protecting environment, and it needs to be comprehensive sustainability covering wide range of aspects especially conceptual and practical competencies of sustainability, this will not only help build more sensitive hospitality leaders but will also contribute in the larger picture of sustainable development goals, despite the constant interest in the importance of sustainability, it is very rarely been taught at the hospitality curriculum. The integration of sustainability education also addresses industry demands for professionals capable of implementing sustainable practices while maintaining operational efficiency and guest satisfaction (Font et al., 2016).

### Hotel Industry Perspective and Market Dynamics

#### Indian Hotel Industry Overview

The Indian hotel industry represents one of the world's fastest-growing hospitality markets, driven by increasing domestic travel, rising disposable incomes, and growing international tourist arrivals. Amid the global crises, the India's hospitality and tourism sector powered its rise at the global stage, India economic resilience and domestic vibrancy were catalyst in achieving the desired goal, the hotel segment domestically began with successful launching of hotel IPO's showing the resilience of the market and the confidence amongst the investors (FICCI, 2023). The sector encompasses diverse segments, including luxury hotels, business hotels, budget accommodations, and boutique properties, each requiring specialised competencies and operational approaches (EY, 2023).

Major hotel chains such as Indian Hotels Company Limited (Tata Group), ITC Hotels, Oberoi Group, and international brands like Marriott, Hilton, and Accor have significantly expanded their presence in India, creating substantial employment opportunities for hospitality graduates (HVS, 2023). The industry's growth trajectory indicates that by 2030, India will require approximately 5 million skilled hospitality professionals, highlighting the critical importance of effective education and training programs (NSDC, 2023).

#### Technology Transformation in Hotels

The hotel industry's technological transformation has accelerated dramatically, with properties adopting comprehensive digital ecosystems to enhance guest experiences and operational efficiency (PWC, 2023). Key technological innovations include mobile check-in/check-out systems, IoT-enabled room automation, artificial intelligence-powered concierge services, and blockchain-based loyalty programs (Deloitte, 2023). Revenue management systems have evolved from simple pricing tools to sophisticated demand forecasting platforms utilising machine learning algorithms and big data analytics (KPMG, 2023). Hotels are increasingly implementing customer data platforms that integrate multiple touchpoints to create personalised guest experiences and targeted marketing campaigns (McKinsey, 2023). The emergence of contactless technologies, accelerated by COVID-19, has fundamentally changed guest expectations and operational requirements (BCG, 2023). Hotels now require staff proficient in digital platform management, data analytics interpretation, and technology troubleshooting, competencies traditionally absent from hospitality education curricula (Accenture, 2023).

#### Entrepreneurial Opportunities in the Hotel Sector

India's hotel industry offers substantial entrepreneurial opportunities across multiple segments and service categories (CII, 2023). The growing demand for experiential travel has created niches for boutique hotels, heritage properties, eco resorts, and themed accommodations that require innovative business models and creative service offerings (FICCI-EY, 2023). In a lot of emerging economies, hospitality entrepreneurship is a main driver of creating jobs, generating incomes; therefore, it is imperative to discuss the importance of entrepreneurship in the hospitality and tourism sector. Hospitality entrepreneurship has gained much attention in both the medium size enterprise and small scale industries, as a result it has been constantly been in discussion amongst practitioners and policy makers, moreover, small to mid-scale hospitality and tourism enterprise play a significant role in creating jobs, economic development and helps in a balanced development of destinations, such small firms are largely driven by inner drive to maximise the profitability and optimally utilise the resources. Technology entrepreneurship within the hotel sector includes opportunities in property management software development, guest experience platforms, revenue optimisation tools, and sustainability management systems (TiE, 2023). The rise of alternative accommodation platforms and peer-to-peer sharing models has created new entrepreneurial possibilities that blend traditional hospitality services with innovative business approaches (NASSCOM, 2023).

In the dynamic world of hospitality, the regulatory affairs also evolve with time, especially as the technology being increasingly adopted by hoteliers, the guests privacy and safety becomes prime concern, therefore, the regulatory affairs evolve with time and entrepreneurs need to be updated the changing norms, however, the biggest challenge for the entrepreneurs is to keep innovating their products while maintaining the adherence to the legal requirements and without hampering the product innovation capabilities, the focus remains on food safety, environment laws, environmental

impacts and customer privacy, therefore hotel entrepreneurship increasingly requires an understanding of complex regulatory environments, sustainable business practices, and digital marketing strategies, competencies that traditional hospitality education has not adequately addressed (CII-BCG, 2024).

## Sustainability Imperatives in Hotel Operations

The hotel industry faces increasing pressure to implement sustainable practices across environmental, social, and economic dimensions (WTTC, 2023). Environmental sustainability requirements include energy efficiency improvements, waste management optimisation, water conservation measures, and carbon footprint reduction initiatives (UNEP, 2023). Social sustainability considerations encompass community engagement, local sourcing preferences, cultural preservation efforts, and inclusive employment practices (IFC, 2024). Economic sustainability involves creating long-term value for multiple stakeholders while maintaining profitability and competitive positioning (OECD, 2024). Indian hotels are increasingly pursuing sustainability certifications such as LEED, green key, and earth check, requiring staff with specialised knowledge in environmental management systems and sustainable operations (IGBC, 2023). The integration of sustainability practices with guest satisfaction and operational efficiency demands a sophisticated understanding of systems thinking and stakeholder management (TERI, 2024).

## Methodology

This research adopts a qualitative approach utilising a comprehensive literature review to examine the integration of technology, entrepreneurship, and sustainability in hospitality education. The systematic literature review was synthesised through Preferred Reporting Items for Systematic Review and meta-analysis protocols (PRISMA, 2020; Page et al., 2021) for its rigour (Figure 1). It further examined existing literature to develop a framework and practical recommendations for curriculum enhancement, through systematic literature search using Scopus indexed data bases covering publications up to 2025, focusing on peer-reviewed articles, conference papers, and institutional reports. Key search terms included combinations of "hospitality education," "technology integration," "entrepreneurship education," "sustainability," "curriculum development," and "India." Industry reports from leading consulting firms, government publications, and professional association studies were incorporated to ensure a comprehensive understanding of current market dynamics and future trends.

Reflective thematic analysis was used to analyse the chosen articles in line with Braun and Clarke's (2006) six-phase framework, demonstrating systematic progression from familiarisation to final theme, an inductive coding approach was used, whereby initial codes were generated through repeated reading of the texts. Related codes were then organised into sub-themes and refined into four primary themes through an iterative process of review and comparison. The study examined existing literature to develop a framework and practical recommendations for curriculum enhancement.

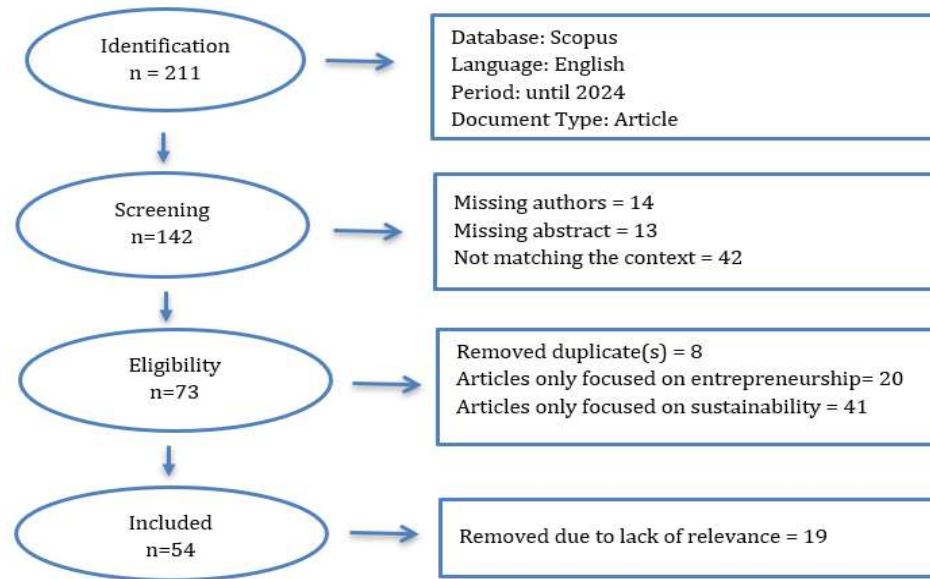


Figure 1: PRISMA Flow Diagram

## Data Analysis

After screening 211 Scopus-indexed articles according to PRISMA 2020, 54 studies were included for qualitative analysis. Reflective thematic analysis was used to analyse the chosen articles in line with Braun and Clarke's (2006) six-phase framework, demonstrating systematic progression from familiarisation to final theme (Table 1-5). Data extracted from each study included reported findings, conceptual discussions, and interpretations to review objectives. An inductive coding approach was used, where initial codes were generated through repeated reading of the existing literature. Related codes were then prepared into sub-themes and continued refinements of themes were done to ensure analytical rigour, internal consistency, and clear description, as a result, four primary themes were formulated which are further proposed in a framework that represents their impact on integrating hospitality education. The themes of industry alignment, technology integration, entrepreneurship development, and sustainability awareness guided the progressive curriculum distribution which is illustrated in figures 3–5, further the curriculum is operationalised into year-wise module distribution mapped in table 6.

## Inclusion and Exclusion Criteria

Studies were included if they examined hospitality or tourism education and involved students, educators, or institutions within higher education or vocational training contexts. Eligible studies focused on integrated or interdisciplinary educational approaches that explicitly incorporated technology, entrepreneurship, and sustainability, or at a minimum combined two of these domains within hospitality curricula, courses, or pedagogical frameworks. To meet the inclusion criteria, studies were required to report at least one relevant educational outcome, including student competencies (digital, entrepreneurial, or sustainability-related), employability or career readiness, innovation capability, learning engagement, or industry relevance. Studies were excluded if they focused exclusively on non-hospitality disciplines, addressed only a single disciplinary component without integration, lacked evaluative outcome data, were conceptual, editorial, or opinion-based in nature, or

were published in languages other than English. The inclusion and exclusion criteria were guided by the PICO framework (Population, Intervention, Comparison & Outcome), focusing on hospitality and tourism education populations, interdisciplinary curricula integrating technology, entrepreneurship, and sustainability, comparisons with conventional hospitality programmes, and outcomes related to enhanced student competencies, employability, career readiness, and industry relevance.

### Reflexive Thematic Analysis Framework

During phase I of Braun and Clarke's (2006) reflexive thematic analysis, the dataset was organised into a raw data chart (Table 1) consisting of discrete meaning units to facilitate familiarisation with the data prior to coding."

**Table 1: Phase I of Braun and Clarke's (2006) Reflexive Thematic Analysis – Raw Data Extraction**

Source: Authors' work

| Raw Data ID | Data Extract                                                                                                                                                                                                                                                        |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RD1         | <i>"Early hospitality programs focused primarily on operational skills, emphasising practical training in food service, accommodation management, and guest relations" (Hampton, 2004).</i>                                                                         |
| RD2         | <i>"Hospitality education has evolved significantly from its origins in vocational training to contemporary academic programs offering specialised degree" (Morrison &amp; O Mahony, 2003).</i>                                                                     |
| RD3         | <i>"Recent studies highlight the importance of preparing students for technology-driven hospitality environments" (Neuhofer et al., 2015).</i>                                                                                                                      |
| RD4         | <i>"Technology integration in hospitality education encompasses multiple dimensions, including the use of educational technologies in teaching delivery and the incorporation of industry relevant technological competencies in curricula" (Law et al., 2019).</i> |
| RD5         | <i>"Hospitality programs integrating technology education demonstrate improved graduate employability and industry relevance" (Kim et al., 2013).</i>                                                                                                               |
| RD6         | <i>"Entrepreneurship education has gained prominence in hospitality curricula as the industry increasingly values innovation, adaptability, and business creation capabilities" (Thomas et al., 2011).</i>                                                          |
| RD7         | <i>"Hospitality students exposed to entrepreneurship education shows enhanced innovative thinking and improved business acumen" (Bosworth &amp; Farrell, 2011).</i>                                                                                                 |
| RD8         | <i>"Hotels are increasingly implementing customer data platforms that integrate multiple touchpoints to create personalised guest experiences and targeted marketing campaigns" (McKinsey, 2023).</i>                                                               |
| RD9         | <i>"Graduates with sustainability competencies demonstrate enhanced problem-solving abilities and improved long-term thinking capabilities" (Legrand et al., 2013).</i>                                                                                             |
| RD10        | <i>"The integration of sustainability education also addresses industry demands for professionals capable of implementing sustainable practices while maintaining operational efficiency and guest satisfaction" (Font et al., 2016).</i>                           |

After the initial data extraction, the initial coding was conducted inductively during phase II of Braun and Clarke's (2006) reflexive thematic analysis, with multiple codes applied to each data extract to capture salient features related to hospitality education, technology integration, employability, and curriculum relevance (Table 2).

**Table 2: Phase II of Braun and Clarke's (2006) Reflexive Thematic Analysis – Initial Coding**

**Source: Authors' work**

| <b>Raw Data ID</b> | <b>Condensed Raw Data Extract</b>                                                              | <b>Initial Code(s)</b>                                 |
|--------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| RD1                | <i>Early hospitality programs focused on operational skills and practical training</i>         | <i>Operational skill centric curriculum</i>            |
|                    |                                                                                                | <i>Emphasis on practical hospitality training</i>      |
| RD2                | <i>Hospitality education has evolved significantly from its origins in vocational training</i> | <i>Transformation of hospitality education</i>         |
|                    |                                                                                                | <i>Traditional vocational training</i>                 |
| RD3                | <i>Importance of preparing students for technology driven hospitality environments</i>         | <i>Integrating technology</i>                          |
|                    |                                                                                                | <i>Changing hospitality spectrum</i>                   |
| RD4                | <i>Technology integration in teaching and curriculum</i>                                       | <i>Integration of educational technologies</i>         |
|                    |                                                                                                | <i>Technology enabled teaching delivery</i>            |
| RD5                | <i>Technology integrated programs improve employability</i>                                    | <i>Industry relevance of technology education</i>      |
|                    |                                                                                                | <i>Technology-driven employability</i>                 |
| RD6                | <i>Growing importance of entrepreneurship education</i>                                        | <i>Entrepreneurship in hospitality curriculum</i>      |
|                    |                                                                                                | <i>Industry demand for innovation and adaptability</i> |
| RD7                | <i>Entrepreneurship education enhances innovation and business skills</i>                      | <i>Enhanced innovative thinking</i>                    |
|                    |                                                                                                | <i>Improved business acumen</i>                        |
| RD8                | <i>Hotels using customer data platforms for personalised experiences</i>                       | <i>Data driven guest personalisation</i>               |
|                    |                                                                                                | <i>Integrated customer data platform</i>               |
| RD9                | <i>Sustainability competencies improve problem solving and long term thinking</i>              | <i>Sustainability competencies</i>                     |
|                    |                                                                                                | <i>Enhanced problem solving abilities</i>              |
| RD10               | <i>sustainability education improve efficiency and guest satisfaction</i>                      | <i>Sustainability management systems</i>               |
|                    |                                                                                                | <i>Revenue optimisation opportunities</i>              |

In phase III, related initial codes were collated into candidate sub-themes to capture broader patterns in the data (Table 3). These sub-themes reflected recurring issues related to skill development, infrastructure limitations, technology integration, entrepreneurship education, sustainability

competencies, and data-driven hospitality practices.

**Table 3: Phase III of Braun and Clarke's (2006) Reflexive Thematic Analysis – Sub-Theme Development**

Source: Authors' work

| <b>Sub-Theme ID</b> | <b>Sub-Theme Label</b>                                                     | <b>Initial Codes Grouped</b>                                                                                                 |
|---------------------|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| T1                  | <i>Skill-Focused Hospitality Education</i>                                 | <i>Operational skill centric curriculum; Emphasis on practical hospitality training</i>                                      |
| T2                  | <i>Changing Nature of Education in Alignment with Hospitality Industry</i> | <i>Integrated Hospitality; Comprehensive Curriculum</i>                                                                      |
| T3                  | <i>Technology Driven Hospitality Environment</i>                           | <i>Hospitality Industry Adopting Technology; Future Hospitality Trends</i>                                                   |
| T4                  | <i>Technology Integration in Hospitality Education</i>                     | <i>Integration of educational technologies; Technology enabled teaching delivery; Industry relevant technological skills</i> |
| T5                  | <i>Technology Driven Employability</i>                                     | <i>Technology driven employability; Industry relevance of technology education</i>                                           |
| T6                  | <i>Entrepreneurship Education in Hospitality</i>                           | <i>Entrepreneurship in hospitality curriculum; Industry demand for innovation and adaptability</i>                           |
| T7                  | <i>Innovation and Business Capability Development</i>                      | <i>Enhanced innovative thinking; Improved business acumen</i>                                                                |
| T8                  | <i>Customer Data for Personalisation</i>                                   | <i>Integrated customer data platforms; Data driven guest personalisation; Targeted marketing strategies</i>                  |
| T9                  | <i>Sustainability Competency Development</i>                               | <i>Sustainability competencies; Long-term strategic thinking; Enhanced problem-solving abilities</i>                         |
| T10                 | <i>Sustainability Education Impacts Guest Satisfaction</i>                 | <i>Increasing Sustainability Awareness; Sustainability and Guest Satisfaction; Impact of Sustainability Awareness</i>        |

Phase IV, focussed on reviewing sub-themes for coherence, overlap, and relevance to the research focus. Closely related sub-themes are merged into broader candidate themes (Table 4).

**Table 4: Phase IV of Braun and Clarke's (2006) Reflexive Thematic Analysis – Theme Review and Refinement**

Source: Authors' work

| <b>Candidate Theme</b> | <b>Sub-Themes Reviewed &amp; Merged</b>                                                                                            | <b>Rationale</b>                                                                                       |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| CT1                    | <i>Skill-Focused Hospitality Education, Hospitality Industry Aligned Changing Nature of Education</i>                              | <i>Both address practical skill development and employability readiness</i>                            |
| CT2                    | <i>Technology Driven Hospitality Environment, Technology Integration in Hospitality Education, Technology Driven Employability</i> | <i>Similar themes focusing on Technology Integration in Education; Technology-Driven Employability</i> |
| CT3                    | <i>Entrepreneurship Education in Hospitality, Innovation and Business Capability Development</i>                                   | <i>Entrepreneurship Education; Innovation and Business Capability Development</i>                      |
| CT4                    | <i>Customer Data for Personalisation</i>                                                                                           | <i>Stands independently as a systemic challenge</i>                                                    |
| CT5                    | <i>Sustainability Competency Development, Sustainability Education Impacts, and Guest Satisfaction</i>                             | <i>Sustainability Competency Development</i>                                                           |

The phase V involved clearly defining the scope, focus, and meaning of each theme and assigning concise, analytic names (Table 5).

**Table 5: Phase V of Braun and Clarke's (2006) Reflexive Thematic Analysis – Final Theme Definition**

Source: Authors' work

| <b>Final Theme (FT)</b> | <b>Theme Names</b>                  | <b>Definition</b>                                                                                                                                                  |
|-------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FT1                     | <i>Industry Alignment</i>           | <i>Emphasises the role of applied learning, hands-on training, and operational skill development in improving graduate employability in hospitality education.</i> |
| FT2                     | <i>Technology integration</i>       | <i>Captures the integration of digital tools and industry-relevant technologies into hospitality curricula to enhance industry readiness.</i>                      |
| FT3                     | <i>Entrepreneurship Development</i> | <i>Captures the integration of digital tools and industry-relevant technologies into hospitality curricula to enhance industry readiness.</i>                      |
| FT4                     | <i>Sustainability Awareness</i>     | <i>Focuses on the development of sustainability competencies that enhance problem-solving ability and long-term strategic thinking.</i>                            |

After applying Braun and Clarke's (2006) six-phase framework, four interrelated themes were generated. The findings highlight a strong emphasis on practice oriented skill development in line with the latest industry requirements alongside persistent structural barriers affecting graduate employability. Technology integration emerged as a critical enabler, both within hospitality education and hotel operations. Entrepreneurship education and sustainability competencies further contribute to innovation readiness and long-term strategic thinking.

#### Current State of Hospitality Education in India

## Institutional Landscape

India's hospitality education landscape comprises diverse institutions, including specialised hospitality schools, university departments, and professional training institutes (Kumar, 2018). The sector includes both government and private institutions, with varying levels of infrastructure, faculty expertise, and industry connections. Leading institutions such as the Institute of Hotel Management (IHM) network, private universities, and international collaborations provide different approaches to hospitality education. However, significant variations exist in curriculum quality, technological infrastructure, and industry alignment across institutions. The National Council for Hotel Management and Catering Technology (NCHMCT) regulates government institutions, while private institutions operate under various university affiliations and autonomous structures (NCHMCT, 2023). This fragmented regulatory environment creates inconsistencies in educational standards and graduate competencies.

## Curriculum Analysis

Traditional hospitality curricula in India have emphasised operational competencies, including food production, accommodation operations, and service management. While these foundational elements remain important, contemporary industry demands require enhanced focus on technological proficiency, business innovation, and sustainable practices. Current curriculum gaps include limited technology integration, insufficient entrepreneurship education, and minimal sustainability coverage (Kumar, 2018). These limitations impact graduate preparedness for modern hospitality challenges and career advancement opportunities. The emphasis on practical training, while valuable, often lacks integration with contemporary business concepts and emerging industry trends. Laboratory facilities and industry exposure opportunities vary significantly across institutions, creating disparities in learning experiences and outcomes.

## Industry Expectations and Requirements

#### Technology Competencies

Industry stakeholders increasingly demand graduates with technological proficiency across multiple domains (Buhalis & Leung, 2018). Key expectations include familiarity with property management systems, customer relationship management platforms, revenue management tools, and emerging technologies such as artificial intelligence and IoT applications. The COVID-19 pandemic has accelerated technology adoption in hospitality operations, creating urgent demand for digitally literate professionals (Baum et al., 2020). Contactless service delivery, digital marketing, and data analytics have become essential competencies for hospitality professionals. Hotel chains specifically require graduates capable of managing integrated technology platforms, analysing performance metrics, and

implementing digital guest engagement strategies (Marriott International, 2023). The ability to troubleshoot technology issues and train colleagues in system usage has become increasingly valuable for career advancement.

## Entrepreneurial Skills

The hospitality industry's entrepreneurial nature requires graduates with innovation capabilities, business development skills, and adaptability (Thomas et al., 2011). Industry expectations include opportunity recognition, creative problem solving, risk assessment, and business planning competencies. Small and medium enterprises dominate India's hospitality sector, making entrepreneurial skills particularly relevant for career success (Morrison et al., 2009). Additionally, entrepreneurial capabilities within established organisations enable graduates to drive innovation and competitive advantage. Hotel industry leaders emphasise the importance of graduates who can identify new revenue opportunities, develop innovative service concepts, and lead change management initiatives (ITC Hotels, 2023). The ability to create business cases for new initiatives and manage project implementation has become increasingly important for middle and senior management roles.

## Sustainability Awareness

Growing environmental consciousness and regulatory requirements have made sustainability competencies essential for hospitality professionals (Bohdanowicz, 2005). Industry expectations include an understanding of environmental impact assessment, sustainable resource management, and social responsibility practices. The integration of sustainability practices with operational efficiency and guest satisfaction requires sophisticated knowledge and skills that traditional hospitality education approaches have not adequately addressed (Font et al., 2016). Leading hotel companies are implementing comprehensive sustainability programs requiring staff capable of measuring environmental impacts, engaging with local communities, and communicating sustainability initiatives to guests (Taj Hotels, 2023). Certification programs and sustainability reporting have created demand for professionals with specialised knowledge in these areas.

## Findings and Analysis

### Integration Benefits

The literature review reveals multiple benefits of integrating technology, entrepreneurship, and sustainability in hospitality education. These benefits include enhanced graduate employability, improved industry relevance, and better preparation for contemporary challenges. Students exposed to integrated curricula demonstrate superior problem-solving abilities, enhanced creativity, and improved adaptability to industry changes (Kumar, 2018). The multidisciplinary approach also develops critical thinking skills and systems understanding essential for hospitality leadership roles. Hotel industry feedback indicates that graduates with integrated competencies demonstrate faster adaptation to workplace requirements, enhanced innovation capabilities, and improved leadership potential (FHRAI, 2023). These professionals are better positioned for career advancement and entrepreneurial success.

## Implementation Challenges

Despite recognised benefits, several challenges impede the effective integration of multiple disciplines in hospitality education. Key challenges include faculty limitations, infrastructure constraints, curriculum design complexities, and institutional resistance to change. Faculty

development emerges as a critical challenge, as effective integration requires educators with expertise across multiple domains (Plews & Zizka, 2019; Ahlawat & Rawal, 2022). Traditional hospitality educators may lack sufficient knowledge in technology, entrepreneurship, or sustainability areas to deliver integrated curricula effectively. Infrastructure limitations, particularly in technology resources and laboratory facilities, constrain the practical implementation of integrated approaches (Law et al., 2019; Tribe, 2002). Additionally, curriculum design complexities arise from the need to balance traditional hospitality competencies with emerging requirements. Industry partnerships, while essential for effective integration, can be difficult to establish and maintain due to competing priorities and resource constraints (Kumar, 2018). The rapid pace of technological change makes it challenging for educational institutions to maintain current and relevant curricula.

### Proposed Framework for Integration

Integrated Hospitality Education Framework (Figure 2)

Based on literature analysis and industry requirements, this study proposes a comprehensive framework for integrating technology, entrepreneurship, and sustainability in hospitality education. The framework (Figure2) emphasises interdisciplinary connections and practical applications while maintaining core hospitality competencies. The proposed model consists of four interconnected components: foundational knowledge, technological proficiency, entrepreneurial mindset, and sustainability awareness. These components are integrated throughout the curriculum rather than treated as separate subjects. Many similar studies have highlighted the importance integrating hospitality education but largely the trends are discussed in isolation (Law et al., 2019; Tribe, 2002), hence, fall short of proposing an integrated framework from foundation to advance competencies, therefore, the proposed framework draws from the existing literature to form a coherent structure that integrates components otherwise discussed in isolation.

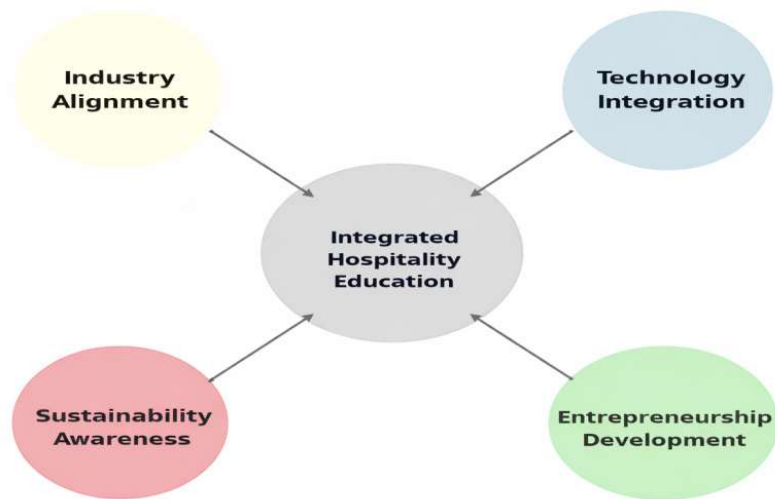


Figure 2: Integrated Hospitality Education Framework

Source: Authors’ work

#### Curriculum Structure

The existing literature review discussed the benefits of integrating technology, entrepreneurship and sustainability in hospitality education with its impact on enhanced employability, industry

relevance, adaptability, and leadership readiness in detail (Kumar, 2018; FHRAI, 2023), it consistently emphasise the need for graduates to acquire foundational hospitality competencies in the initial years before moving toward a multidisciplinary approach. Studies highlight that integrated exposure improves problem-solving, innovation, and systematic thinking, only if learners possess sufficient basic understanding of the hospitality industry and functional areas (Kim et al., 2013; Ivanov et al., 2019).

In the initial years of the hospitality programme, the understanding of the core hospitality operational areas is essential for student retention, the focus is around professional development, workplace readiness (Kim et al., 2013; David & Coenen, 2014) and industry projects (FHRAI, 2023) therefore the focus of initial years on subjects on digital literacy like basic property management system, (Table 6). Similarly, in the initial years of the curriculum, studies have highlighted the importance of having technology, entrepreneurship, and sustainability only at the introductory level rather than its advanced application (Ivanov et al., 2019); hence focus on curriculum that covers creativity through business fundamentals, environmental awareness and hotel simulations (Table 6). In year 2, the reduction of subjects in hospitality foundations relates to students achieving basic operational competence, as identified in curriculum progression studies (Kim et al., 2013). The increase in technology integration and entrepreneurship is based on existing literature, which emphasises the importance of applied systems of E-commerce such as customer relationship management (Kumar, 2018), (Table 6). The remaining distribution to sustainability reflects a shift towards resource management, and on industry projects (Hussain & Soni 2019) which are reflected through aspects of planning through opportunity recognition, resource management and exposure to sustainable restaurant concept (Table 6). As the student progresses and gains basic hospitality understanding in initial years, the multidisciplinary integration at higher stages enhances innovation, analytical thinking, and leadership capacity (FHRAI, 2023), therefore emphasising on revenue management (analytics), business development (innovation), impact assessment (reporting) and technology enabled service innovation modules in year three (Table 6). Prior studies have emphasised on shifting the need towards graduating years on leadership, innovation, and strategic decision making (Min & Gursoy, 2016), understanding of latest technologies in industry, importance of adopting sustainable practices (Hussain & Soni 2019), therefore in year 4 (Table 6), the hospitality foundations are reduced; acknowledging that students now operate at an advanced level (Plews & Zizka, 2019) and emphasis is on subjects like emerging technologies (artificial intelligence), venture creation (leadership), strategy integration (policy) and comprehensive industry project.

**Table 6: Proposed Integration Framework Components**

**Source: Authors' work**

| <b>Academic Year</b> | <b>Technology Focus</b>                                | <b>Entrepreneurship Focus</b>      | <b>Sustainability Focus</b> | <b>Integration Projects</b> |
|----------------------|--------------------------------------------------------|------------------------------------|-----------------------------|-----------------------------|
| Year 1               | Basic Property Management System<br>(Digital Literacy) | Business Fundamentals (Creativity) | Environmental Awareness     | Hotel Operations Simulation |

|        |                                                          |                                    |                               |                                 |
|--------|----------------------------------------------------------|------------------------------------|-------------------------------|---------------------------------|
| Year 2 | Customer Relationship Management Systems<br>(E-commerce) | Opportunity Recognition (Planning) | Resource Management           | Sustainable Restaurant Concept  |
| Year 3 | Revenue Management (Analytics)                           | Business Development (Innovation)  | Impact Assessment (Reporting) | Tech-Enabled Service Innovation |
| Year 4 | Emerging Technologies (Artificial Intelligence)          | Venture Creation (Leadership)      | Strategy Integration (Policy) | Comprehensive Industry Project  |

Industry Integration Mechanisms

The framework incorporates multiple industry integration mechanisms, including guest lectures by technology leaders, entrepreneurship incubators, and sustainability consultants (Lee & Joung, 2017). Partnership agreements with hotel chains provide access to current systems and real-world case studies for student learning. Internship programs are redesigned to ensure exposure to technology applications, entrepreneurial projects, and sustainability initiatives within host organisations (Zopiatis et al., 2021). Industry mentorship programs connect students with professionals who exemplify integrated competencies and career success. While prior studies have emphasised traditional forms of industry engagement such as internships and guest lectures (Baum, 2020; Min & Gursoy, 2016; Lee & Joung, 2017), this framework extends existing literature by incorporating technology led guest sessions, entrepreneurship and importance of sustainability on the evolving skill requirements of the contemporary hospitality industry.

Implementation Strategy

Institutional Readiness Assessment

Successful implementation of integrated hospitality education requires a comprehensive institutional readiness assessment covering faculty capabilities, infrastructure resources, industry partnerships, and organisational culture (Anwar et al., 2024). Faculty development emerges as the most critical component, requiring investment in training programs, recruitment of specialised expertise, and creation of collaborative teaching models (Plews & Zizka, 2019). Technology infrastructure assessment includes evaluation of hardware, software, and network capabilities necessary for effective integration (Anwar et al., 2024). While earlier studies have emphasised on the importance of faculty expertise, infrastructure, and industry collaboration for curriculum effectiveness, this research extends the understanding by proposing institutions to evaluate their current state and identify gaps that require attention before implementing integrated approaches along with technology infrastructure readiness, including hardware, software, and network capabilities in the evolving digital demands of the hospitality education.

### Phased Implementation Approach

Earlier studies in hospitality education have consistently highlighted the need for gradual and adaptive curriculum change, particularly when industry integration or curriculum reform is involved, Kusumawardhana (2019) emphasised that hospitality curriculum development should be incremental, allowing institutions to respond to constraints related to resources, faculty readiness, and regulatory frameworks and Min & Gursoy (2016) advocated aligning curriculum changes with industry expectations through iterative feedback and continuous improvement rather than large-scale reform. While earlier studies recommended gradual implementation, they often lacked explicit implementation roadmaps. The proposed implementation timeline and key milestone (Figure 3) strategy employ a phased approach, beginning with pilot programs and gradually expanding to full curriculum integration, thereby extending prior work.

The phase 1 of figure 3 primarily addresses industry alignment by focusing on faculty development, infrastructure setup, and the formalisation of industry partnerships, phase 2 operationalises technology integration, entrepreneurship development, and sustainability awareness through pilot programs, module integration, and student assessment, the next phase translates to the discussed themes across the curriculum by ensuring full implementation, curriculum redesign and quality assurance. Finally phase 4 is an ongoing process that keeps evolving through continuous improvement, industry feedback and curriculum updates, which enable the evaluation and the expansion of the programme.



**Figure 3: Implementation Timeline and Milestones**

**Source: Authors' work**

### Quality Assurance and Assessment

Quality assurance mechanisms include regular curriculum review, industry feedback collection, and graduate employability tracking (Alghaswyneh, 2020; Ayvaz, Iyanna & Foster, 2024). Assessment methods are redesigned to evaluate integrated competencies through project based learning, case study analysis, and practical applications (Roma, 2021). Alumni networks contribute feedback on career progression and competency development (Cha, Kim & Cichy, 2013; David & Coenen, 2014). The findings are consistent with prior research emphasising on continuous quality assurance through curriculum review, industry feedback, and focus on graduate employability, therefore the research extends existing literature by incorporating alumni networks as a structured feedback mechanism,

importance of alumni insights into career progression and competency development to provide a long term perspective on curriculum effectiveness, thereby strengthening evidence based curriculum improvement processes.

Expected Outcomes and Benefits

Student Competency Enhancement

Research indicates that multidisciplinary education enhances critical thinking abilities, problem-solving skills, and systems understanding (Boley, 2011). These capabilities are particularly valuable in the complex, interconnected hospitality industry where professionals must navigate multiple stakeholder interests and operational challenges.

The proposed Competency Development Progression model (Figure 4) extends existing literature by structuring competency development across multiple domains. The gradual increase in technology, entrepreneurship, and sustainability competencies (figure 4) through literature review reflects empirical evidence that integrated curriculum enhances problem-solving ability, innovation, and industry readiness progressively over time (Kumar, 2018; FHRAI, 2023). Lower competency levels in Year 1 (figure 4) relate to introductory exposure and foundational learning, as identified in prior studies (Hussain & Soni 2019). The steady rise in Years 2 and 3 aligns with findings that applied, cross-disciplinary learning strengthens analytical capability and adaptability once foundational competencies are established (Kim et al., 2013; Ivanov et al., 2019). The higher competency levels achieved in year 4 is consistent with industry findings (FHRAI, 2023), that graduates with sustained multidisciplinary exposure demonstrate better industry readiness and leadership potential. Drawing on multidisciplinary education research, which highlights improvements in critical thinking, problem solving, and systems understanding (Boley, 2011), the competency development progression model’s (figure 4) integrated approach is expected to produce graduates with enhanced competencies across multiple domains, improving their employability and career development prospects.



Figure 4: Competency Development Progression Model

Source: Authors’ work

Industry Alignment and Relevance

The proposed integration framework components (Table 6) operationalises the progression depicted in Figure 3, While Figure 3 visually illustrates a gradual shift from foundational learning in year 1 towards advanced, integrative learning by year 4, table 6 outlines the practical implementation of this shift by identifying the key inputs to be emphasised at each stage of the hospitality programme. It addresses identified gaps between hospitality education and industry expectations, improving graduate preparedness for contemporary challenges (Ahlawat & Rawal, 2022). Enhanced industry alignment is expected to strengthen employer satisfaction, increase graduate employment rates, and improve career progression outcomes (Ford, Heung & Ngai, 2009). Stronger industry education partnerships resulting from the integrated approach will facilitate knowledge transfer, practical learning opportunities, and continuous curriculum updating based on evolving industry needs (Kumar, 2018). Although many earlier studies documented the existence of industry education gaps, fewer provided comprehensive, implementable frameworks to address them. The Proposed Integration Framework Components (Table 6) add value by (a) Translating identified gaps into specific, actionable integration components and (b) By offering a structured response rather than a methodical discussion.

## Economic Impact and Innovation

The integration of entrepreneurship education is expected to generate increased innovation within the hospitality sector, leading to new business models, service innovations, and operational improvements (Abranja, Rodrigues & Lima, 2022). Graduate entrepreneurs will contribute to job creation and economic development within local and regional markets (Alrawadieh et al., 2021). Sustainability competencies will enable graduates to implement environmentally and socially responsible practices that create long term value (Horng et al., 2024). Existing studies have long acknowledged the importance of entrepreneurial skills for innovation, adaptability, and self-employment in hospitality and tourism (Thomas et al., 2011) and sustainability education as a response to environmental, social, and ethical challenges facing the hospitality sector (Airey & Tribe, 2005), this research is strongly aligned with existing literature and adds through structural approach to prepare hospitality graduates to drive digital transformation initiatives within hospitality organisations, improving operational efficiency and help maintain competitive advantage.

## Challenges and Limitations

### Implementation Challenges

Several challenges may impede the successful implementation of the integrated framework. Faculty development represents the most significant challenge, as many hospitality educators lack expertise in technology, entrepreneurship, or sustainability areas (Boley, 2011). Recruiting qualified faculty with multidisciplinary competencies is both difficult and expensive for many institutions. Infrastructure limitations, particularly in technology resources and specialised facilities, constrain the practical implementation of integrated approaches. Smaller institutions may struggle to invest in the necessary hardware, software, and laboratory facilities required for effective integration. Curriculum design complexity presents another significant challenge, as balancing traditional hospitality competencies with emerging requirements requires careful planning and coordination (Kumar, 2018). Institutional resistance to change and stakeholder scepticism may also impede implementation efforts. Several studies have highlighted the gap for implementing such frameworks; this study extends existing literature by highlighting how these persistent challenges become more pronounced within integrated educational models.

### Industry Collaboration Challenges

Establishing effective industry partnerships requires significant relationship building and ongoing management efforts. Companies may be reluctant to share proprietary information or invest time in educational collaboration without clear benefits (Hussain & Soni 2019). The rapid pace of technological change makes it challenging to maintain current partnerships and relevant learning experiences. The geographic distribution of quality hospitality businesses may limit partnership opportunities for institutions in smaller cities or rural areas (Raj et al., 2023). The identification of industry partnership constraints is strongly aligned with existing hospitality education literature and extends it by highlighting practical and contextual barriers, furthermore, the geographic concentration of quality hospitality businesses may limit partnership opportunities for institutions located in smaller cities or rural areas, thereby introducing contextual constraints often underrepresented in earlier studies.

## Research Limitations

This study's reliance on secondary data through literature review represents a significant limitation. While comprehensive, the analysis would benefit from primary data collection, including surveys and interviews with educators, industry professionals, and students to validate findings and recommendations. The conceptual nature of the proposed framework requires empirical testing and validation through pilot implementations. Additionally, the focus on Indian hospitality education may limit generalizability to other geographical contexts with different industry characteristics and educational systems. The proposed framework offers a structured approach to curriculum integration that maintains core hospitality competencies while enhancing technological proficiency, entrepreneurial mind-set development, and sustainability awareness. The phased implementation strategy provides a practical roadmap for institutions seeking to modernise their hospitality programs and better serve industry needs.

## Recommendations

### Institutional Recommendations

The research is strongly aligned with the existing literature and extends it by consolidating best practice implementation strategies and also emphasises on the importance of faculty development and institutional readiness. Higher education institutions should prioritise faculty development through comprehensive training programs, industry partnerships, and recruitment of specialised expertise. Investment in technology infrastructure, including hardware, software, and network capabilities, is essential for effective integration implementation. Institutions should establish industry advisory committees to ensure curriculum relevance and facilitate practical learning opportunities through internships, projects, and collaborative research (Kumar, 2018). Regular curriculum review and updating processes should be implemented to maintain alignment with evolving industry needs.

## Policy Recommendations

Government agencies and educational authorities should develop supportive policies and funding mechanisms for curriculum innovation in hospitality education. Professional development programs for hospitality educators should be established to enhance multidisciplinary competencies. Industry education collaboration frameworks should be strengthened through tax incentives,

partnership facilitation, and knowledge-sharing platforms. Quality assurance mechanisms specific to integrated hospitality education should be developed and implemented. Regulatory bodies should update accreditation standards to reflect integrated competency requirements and support institutional innovation in curriculum development, the suggestion are aligned with prior hospitality education literature and extends it by highlighting the role of systemic and policy level support for curriculum innovation.

## Industry Recommendations

Hotel companies and industry associations should actively participate in educational partnerships, providing internship opportunities, case studies, and expert guest lectures. Investment in faculty development and curriculum enhancement will generate long-term benefits through improved graduate quality. Industry associations should develop certification programs that recognise integrated competencies and provide career advancement opportunities for qualified professionals. Mentorship programs connecting students with industry professionals will enhance learning outcomes and career preparation. The findings add to the existing literature and emphasises on concrete partnership activities.

## Future Research Directions

Future research should focus on empirical validation of the proposed framework through pilot implementations and longitudinal studies tracking graduate outcomes. Comparative studies examining different integration approaches and their effectiveness would provide valuable insights for curriculum development and International comparative studies examining integration approaches in different markets and cultural contexts would contribute to global knowledge and best practice development.

## Conclusion

This study has demonstrated the critical importance of integrating technology, entrepreneurship, and sustainability in hospitality education to address contemporary industry challenges and prepare future ready graduates. The comprehensive literature review reveals significant gaps between traditional educational approaches and evolving industry requirements, particularly in the Indian context, where the hotel industry is experiencing rapid growth and transformation. Including technology is becoming increasingly important in hospitality education as the use of technology is rapidly increasing in the industry. Having introduced and taught technology in the curriculum will give students more opportunities to think and incorporate technology at a very early stage of their professional journey.

The proposed framework offers a structured approach to curriculum integration that maintains core hospitality competencies while enhancing technological proficiency, entrepreneurial mind-set development, and sustainability awareness. The phased implementation strategy provides a practical roadmap for institutions seeking to modernise their hospitality programs and better serve industry needs. The expected outcomes include enhanced graduate employability, improved industry alignment, and better preparation for contemporary hospitality challenges. The hotel industry's perspective emphasises the urgent need for professionals capable of managing complex technology systems, driving innovation initiatives, and implementing sustainable practices while maintaining service excellence. However, successful implementation requires significant investment in faculty development, infrastructure enhancement, and industry partnerships. The challenges are substantial

but not insurmountable, requiring commitment from educational institutions, industry stakeholders, and policy makers.

While this study contributes valuable insights to hospitality education discourse, its reliance on secondary data necessitates future empirical research for validation and refinement. The proposed framework represents a starting point for curriculum innovation that can be adapted to specific institutional contexts and regional requirements. The integration of technology, entrepreneurship, and sustainability in hospitality education is not merely an academic exercise but a strategic imperative for preparing graduates capable of leading the industry's continued evolution. As the hospitality sector becomes increasingly complex and interconnected, educational institutions must embrace multidisciplinary approaches that reflect these realities and prepare professionals for successful careers in the dynamic hotel industry.

The findings reveal that a multidisciplinary approach significantly improves graduate preparedness for contemporary hospitality challenges. This study proposes a structured framework for embedding these critical elements within hospitality education and provides strategic recommendations for higher education institutions in India. The future success of India's hospitality sector depends significantly on the quality and relevance of educational preparation provided to future professionals. By bridging these critical disciplines, educational institutions can contribute to industry growth, innovation, and sustainability while enhancing graduate career prospects and professional development opportunities.

#### **Declaration of generative AI and AI-assisted technologies in the manuscript preparation process**

During the preparation of this work the author(s) used Grammarly in order to improve the grammar and adjust the tone. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the published article..

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