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ARTIFICIAL INTELLIGENCE IN HOSPITALITY EDUCATION: A MULTI-INSTITUTIONAL ANALYSIS OF STUDENT'S AWARENESS, PERCEPTIONS AND PERCEIVED USEFULNESS IN INDIA

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ABSTRACT

The rapidly evolving landscape of Artificial Intelligence (AI) technology integration in the hospitality industry affects service delivery, operational efficiency, and future decision-making. On the contrary, the current pedagogical approach, especially in emerging countries, creates challenges for students as they adapt to an AI-dominated workplace. Therefore, this study explores the awareness, perceptions, and usefulness of AI among hospitality students in relation to their career readiness for an AI-powered workplace. A quantitative cross-sectional survey was adopted using a structured questionnaire on a sample of 489 hospitality students enrolled in 16 institutes across eight states in India. The data were collected by administering an instrument with five-point Likert-scale items assessing students' awareness, perceptions, and perceived usefulness of AI. Data were statistically analyzed using descriptive statistics, and reliability analysis was assessed through Cronbach's alpha test. The outcomes demonstrated moderate to high level awareness (Mean ≈3.8 ±1.2) which signifies discourse knowledge related Chatbot, Robotics and Predictive Analysis application of AI tools by the students' sample group also revealed perceptively positive view on AI (Mean ≈3.9 ±1.1), increased quality services and operational consideration though subtly being concern about job displacement rather than other responded areas perceived usefulness revealed higher marks (Mean ≈4.05 ±1.1), specifically Career Progression as well as for Acquisition Reliability analysis shows Cronbach alpha value as 0.979 indicate the acceptable range to get overall overview on use of Artificial intelligence in Enterprise. However, this paper argues that good norms or intuitive trends within the socioeconomic gap transition for development, between behavioural predispositions about the rapid advancement of science and practice, and educational and theoretical aspects, flanking the demographic generational curve, are resourcefully viable, given the apparent relationship between individual maturational situational variables and institutions.

Keywords: Artificial Intelligence (AI), Hospitality Education, Career Readiness, Student Perception

1. INTRODUCTION

1.1. ARTIFICIAL INTELLIGENCE IN THE HOSPITALITY INDUSTRY

There are several extensive shifts taking place in the hospitality industry. They are being triggered by fast progress in Artificial Intelligence (AI), automation, and data analytics. This sector was recognized as labor-intensive, service-based; however, it is now transforming into technology-infused service ecosystems that focus more on efficiency, personalization, and predictive decision-making. AI chatbots and virtual assistants, service robots, recommendation systems, and predictive analytics have been rapidly adopted in hotels, integrating both customer-facing applications to improve experience performance and operationally oriented solutions [1, 2]. Recently chatbots and virtual assistants are providing around-the-clock support while managing bookings responding inquiries enhancing other services availability not only reducing operational demands but also convenience customers through immediate consistent feedbacks of their question requests Cautious statement requested since indicated that The use robots for example facilitated has seen implementation encourage adoption operations like concierge housekeeping food delivery where speed precision hygiene offered by Had been opportunities increased with dynamics created Post-COVID outbreak according to Legrand (2022) [3].

Another important aspect by which AI adoption in the hospitality industry can be better understood is through predictive analytics, whereby hotels are able to analyze large datasets of customer behavioral patterns and booking patterns, as well as market demand, among other data points that assist in coming up with dynamic price setting strategies, demand forecasting, and resource optimization, hence maximizing profitability and operational efficiencies [4]. Additionally, AI-driven personalization is increasingly a competitive edge, as hotels can now offer personalized services based on guest preferences, thereby increasing customer loyalty and brand differentiation [5]. The use of Predictive Analytics-based AI has also impacted managerial decision-making, with insights from the analysis supporting strategic planning and revenue management, among other areas, thereby gradually replacing intuition-based decisions with evidence-based judgments [6]. Consequently, the roles of human labor in Hospitality workplaces have gradually shifted from routine operational tasks to more analytical and technology-oriented ones. Since these advancements have been realized, it is important to note that the application of AI in hospitality is not a matter of technology but signifies a structural change. This structural change redefines the nature of work, required skills, and service delivery models in hospitality. Today's workforce needs to have hybrid competencies, which involve technical knowledge as well as human giving skills such as empathy, communication, and problem-solving [7, 8]. This new paradigm implies an inevitable transformation in how the next generation of hospitality industry professionals must be educated.

1.2. ARTIFICIAL INTELLIGENCE IN HOSPITALITY EDUCATION

While the hospitality industry is fast-adopting AI technologies, education lags. For decades, the bulk of the hospitality curriculum has focused on what might now be considered foundational operational skills, such as food and beverage management, front-office operations, and housekeeping. While these skills have not become less important, they are insufficient on their own to meet the needs of a technology-driven field in the future [9]. The top institutions around the world have recognized this and have begun integrating AI, data analytics, and digital transformation into their hospitality curricula. For instance, Cornell University, École hôtelière de Lausanne (EHL), or Les Roches, among others, have developed new courses or entire modules dedicated to AI applications, revenue analytics, or smart-hospitality reflecting emerging digitalization trends [10]. More importantly, perhaps, these programs emphasize hands-on learning experiences for students, with industry partners, developing relevant work-based digital competencies alongside traditional service-based roles.

However, even in the most advanced educational systems, the adoption of AI is only partial and piecemeal. Instead of incorporating AI knowledge and skills as core components of the curriculum, it is often added as an elective course or, even worse, as a supplement to the existing courses/subjects [11]. It can therefore be said that the change in hospitality education is still at its infancy stage from a global point of view. Moreover, for Indian higher education institutions, there is a wide gap between industry requirements and academic readiness, where many programs offered by HEGs focus explicitly on traditional service-oriented training without providing insights or exposure to new-age technologies, including AI, Data Analytics or digital tools [12]. The lack of structured incorporation of AI into their curricula, coupled

with limited availability/access to required tech infrastructure and reduced industry linkage, has led to a considerable dearth of skills among most graduates.

Furthermore, faculty readiness poses a critical challenge. Most teaching staff lack the requisite training and exposure to embed AI-related content in their course delivery (pedagogical gap) [13]. Assessment methods and teaching strategies are often traditional and do not reflect the use of technology in the dynamic, changing modern hospitality industry [14]. Equally important, there is a lack of opportunity for students to engage in experiential learning as they are not exposed to AI applications such as hotel management systems, predictive analytics dashboards, or service robots during their internships or industrial training. It limits their ability to apply skills taught in theory, thereby reducing employment opportunities in AI environments [15, 16].

The widening gap between industry needs and what academics produce suggests it is high time we updated our curricula. AI literacy, data-driven decision-making, and digital competencies all need to be integrated into the new model of education without losing focus on the human side and service quality. Thus, it can be concluded that a unified approach, which involves technology, pedagogy, as well as collaboration with industrial partners, is needed to guarantee the success of students in their career path within hospitality [13, 17, 18].

1.3. RESEARCH GAPS

Despite the growing body of literature on AI applications in hospitality, several critical gaps remain. Firstly, most studies have focused on technological adoption, operational efficiency, and customer experience [19], with scant attention being given to the educational implications of AI integration. Secondly, there is a paucity of student-centric empirical studies examining how future hospitality professionals perceive, understand, and interact with AI technologies. While several reviews discuss the concept and theory of AI in education, empirical research detailing students' awareness levels, perceptions, and readiness for AI-led careers, especially in the Indian context, is conspicuously absent [17].

Another critical issue is the gap between awareness and readiness. Some preliminary evidence indicates that students have a general awareness of AI but lack the skills or confidence to use it, suggesting a likely disconnect between education and training provision for employment. Rather than being a business or general graduate skills problem, this is specifically an ‘awareness–readiness’ theory vs practice and implicit skill vs competency matter, where this occurs, an issue for both employability and career development. Further, current research has primarily examined a single stakeholder view (e.g., educators, students, industry) rather than multiple perspectives to gain a collective view of alignment expectations between education and industry. Few existing studies investigate the measurement frameworks for AI competencies in hospitality education, and most studies do not use such specific frameworks [18, 20].

Furthermore, most studies to date have included only developed countries, and very few have focused on emerging markets such as India. India currently has one of the fastest-growing hospitality sectors and digital adoption rates in the World, thus requiring context-specific research for regional challenges/opportunities. The absence of concrete empirical evidence pertaining to awareness, perceptions, and perceived usefulness of AI amongst students also emphasizes the need for a more structured research approach. This is crucial for effective curriculum design to enhance employability and narrow the gap between graduate outcomes and organization requirements due to a lack of appropriate skill sets.

1.4. STUDY AIM

In line with the aforementioned gaps, this study aims to explore students’ awareness, perceptions, and perceived usefulness of Artificial Intelligence technologies in the hospitality sector. More specifically, this research seeks to assess students' knowledge of AI applications, their cognitive relationship to AI in hospitality, and the relevance they attach to AI in their careers. By taking a student-centered perspective, this research will contribute empirically to the scientific literature on how future hospitality professionals are prepared for the industry in the context of AI. Furthermore, achieving identification of potential gaps between current educational practice and the industry's intended outcomes, informing curriculum development, and policymakers. As a result of these study findings, it is expected that a developed, structured competency framework will integrate AI literacy into hospitality education, enabling academic institutions to prepare students more effectively, considering industrial advancement and its translation into education.

2. METHODOLOGY

2.1. STUDY DESIGN

The present study employed a quantitative, cross-sectional research design to systematically measure hospitality students' awareness, perceptions, and perceived usefulness of Artificial Intelligence (AI) within the hospitality industry [21]. A quantitative research approach was deemed suitable because it allows measurement of latent constructs using structured instruments and enables statistical generalization across a large sample [22]. A cross-sectional design, which gathered data at one point in time, was selected since it provides a snapshot of students' levels of AI awareness and attitudes, consistent with previous technology adoption- and educational preparedness-focused studies. This design is particularly well-suited for exploratory or descriptive research in which researchers seek to establish baseline patterns, relationships, and distributions of key variables without introducing experimental control in the study setting. As AI continues to be adopted in hospitality education, cross-sectional surveys provide current insights into students' preparedness and perceptions, which can then inform subsequent inferential modeling and framework building [23].

2.2. SAMPLE AND SAMPLING FRAMEWORKS

A total of 489 hospitality students, comprising UG, PG, and B.Voc program students, were considered sample units for the present study. Data for the present research were collected from 16 institutes in 7 Indian states (Karnataka, Tamil Nadu, Telangana, Andhra Pradesh, Maharashtra, and NCT of Delhi) as well as Punjab in North India, considering the reality that different parts of India provide dissimilar exposure to institutional education, differential regional educational practices, and their integration with technology [24, 25]. The geographical distribution provided diverse representation across several parameters, including institutions' exposure levels to technology adoption, thereby enhancing external validity (generalisability). Non-probabilistic -purposive cum voluntary sampling technique was opted in identifying student samples under study since they are prospective entrants to the AI technology-enabled hospitality industry work scenario in the future. The non-probabilistic purposive sampling method is adopted when one has a specific goal or objective to achieve through a sample. It is perhaps used more often than the probabilistic type, especially in education and social science research, because various categories must be adequately represented or included by design; otherwise, it would be impossible to make any generalizations about the overall population [26]. Individual hospitality student constituted unit via which determination pertaining to his/her own awareness level about use/ applications tech., perception regarding its possible implication usefulness etc. may be drawn since such reflections vary widely among even closely related individuals like twins due to differences exposure opportunity given prior experience access availability particularly as concern knowledge/intelligence absorbed gained through actual-experimenting hands-on-activity more vividly than other another individual who by chance never had occasion experiment herself also often massive-variations exist between fellow-students concerning eagerness enthusiasm,-all which relate direct way perceived clues signs those systems/robotics processes around them et cetera responses during preliminary run smart-system-test could he ask questions judge situations according how close match expectations kids slept middle night proceeded expedited fashion without supervision regular intervals [27].

2.3. DATA COLLECTION INSTRUCTIONS

Data were collected using a structured questionnaire developed to measure key constructs related to awareness of AI, perception of AI, and perceived usefulness of AI. The questionnaire was developed after thoroughly studying a variety of articles on the adoption of AI, the acceptance of technology, and hospitality education in general [28, 29]. The instrument was developed as sections, with each section designed to measure a particular construct and capture the overall concept clearly. All the statements were gauged on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree) due to its pervasiveness for measuring attitudes, perceptions, and subjective evaluation in a social science study [30]. The use of Likert scaling helps quantify latent variables, enabling the computation of a composite score that reflects overall awareness and perception of AI's usefulness. In the context of developing items related to a questionnaire about various facets of AI application, namely awareness of AI tools (e.g., chatbots, robotics, predictive analytics), perceived benefits (e.g., efficiency, personalization, career enhancement), and attitudinal responses towards integration of AI in the hospitality industry, a series of items formed an index hence ensuring convergent

validity. Before the data collection process, the version undergoes content validation by a panel of academic and industry experts to ensure its relevance, clarity, and alignment with current practices. This further enhances the face validity of the tool's measurement [31, 32].

2.4. VARIABLES AND MEASUREMENT CONSTRUCTION

The study concentrated on three major constructs: AI awareness, perception, and perceived usefulness, which were operationalized through several questionnaire items.

- AI Awareness relates to the knowledge of AI technologies and their applications in the hospitality industry, such as chatbots, service robots, data analytics, etc.
- Perception includes students' overall attitude towards AI, their beliefs about the impact on quality of service, job roles, and the transforming industry.
- Perceived Usefulness: It refers to the extent to which students perceive that AI technologies would increase their chances for employability, improvements in operational efficiency, and an advantage in career-related issues.

These constructs are based on existing theories, among which the Technology Acceptance Model (TAM) was one of the earliest models to highlight perceived usefulness and user attitudes as the main precursors for technology adoption [33, 34]. By introducing awareness as an additional construct, this study takes a step forward over existing models in more accurately capturing the educational context of hospitality students. Composite scores of each construct were derived by calculating the mean response across the items associated with it. This procedure was applied in accordance with the measurement best practices of psychometric analysis and allows aggregated data to be meaningfully interpreted [35].

2.5. RELIABILITY ANALYSIS

Cronbach's alpha was calculated for the entire scale to assess its internal consistency and reliability. The obtained value is 0.979, which is much higher than the expected minimum value of 0.70, thus indicating an excellent internal consistency [36]. This implies that the items on the scale are correlated with one another and measure a single underlying construct (reliability). This type is highly desirable in a survey-based study because it ensures that the results obtained are not influenced by measurement error or/and/or inconsistencies in the measurement tool (instrument) used for data collection. High reliability of the scale means that we can rely on our obtained results for subsequent statistical analysis, and there exists a basis to draw valid conclusions [37, 38].

2.6. DATA ANALYSIS TECHNIQUE

Additionally, the collected data were analyzed using descriptive statistics, focusing on the mean and standard deviation to summarize and interpret the distribution of responses across constructs [27]. Therefore, those inferred statistics were suitable for gaining insights, determining central tendencies and variability, and identifying patterns in the overall dataset, since such a form of study, particularly exploratory, underpins baseline insights [39]. The specific mean values indicated the general level of awareness, perception, and perceived usefulness among students, while their corresponding standard deviations revealed the variation/dispersion in response. As such, both statistics were put into context: a five-point Likert scale was used to obtain low (or slight), reasonable (or fair), and high statements from respondents. In addition, stage-wise-developed composite construct scores are aggregated into levels/constructs. This further reduces complexity, facilitates comparative measures between e.g., variables or constructs that will be the focus of future phases of our investigation study involving inferential analyses, i.e., correlation regression, with a view to exploring causes underlying the influence proposed HCCM leading to behavioral own theoretical model [40, 41].

3. RESULTS

3.1. DEMOGRAPHICS PROFILE OF RESPONDENTS

A total of 489 usable responses were used for the analysis. These respondents were drawn from hospitality students in undergraduate (UG), postgraduate (PG), and vocational (B.Voc) programs across 16 institutions in 8 states of India.

Thus, a diverse set of responses was collected to ensure sample representation. Diversity is maintained across gender, academic level, and institution. This also helps in ensuring the external validity and generalization of the results, as per Etikan and Bala (2017) [24].

3.2. AI AWARENESS LEVELS

AI awareness among hospitality students was measured using multiple items on a 5-point Likert scale. Composite scores were calculated for the analysis, and then descriptive statistics of the variables were presented, as shown in Table 1.

Table 1

Table 1 AI Awareness Levels (Mean ± SD)

Dimension	Mean	SD	Interpretation
Awareness of AI tools (chatbots, robots)	3.8	1.2	Moderate–High
Awareness of AI applications in hospitality	3.9	1.1	Moderate–High
Familiarity with AI concepts	3.7	1.3	Moderate
Overall Awareness Score	3.8	1.2	Moderate–High

The results revealed that students have moderate to high awareness of AI technologies in the hospitality sector. Higher awareness of applications indicates that the student is more aware of AI functions (such as chatbots and predictive analytics) than of theoretical concepts. However, the relatively high standard deviation (±1.2) indicates variability in awareness levels, suggesting unequal exposure across institutions. This also supports previous studies indicating that not everyone in AI is aware of hospitality education, and that awareness varies by institution.

3.3. PERCEPTION TOWARDS ARTIFICIAL INTELLIGENCE

To understand students' attitudes toward the implementation of AI in operations and employment in hospitality, a study examined perceptions.

Table 2

Table 2 Perception Toward AI (Mean ± SD)

Statement	Mean	SD	Interpretation
AI improves service efficiency	4.1	1	Positive
AI enhances customer experience	4	1.1	Positive
AI will create better career opportunities	3.9	1.2	Positive
AI may replace human jobs	3.5	1.3	Neutral–Concern
Overall Perception Score	3.9	1.1	Positive

Figure 1

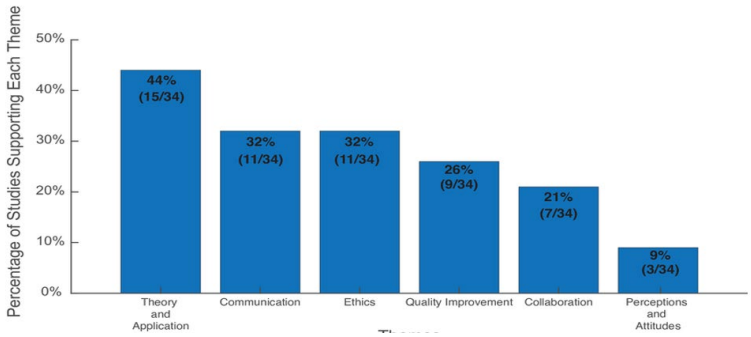

Figure 1 Student Perception Toward AI

The results show a positive perception of AI by hospitality students as shown in Table 2 and Figure 1. They completely agree that AI improves service efficiency and customer experience, indicating their understanding of AI as a tool in adding value to the industry. Nevertheless, moderate agreement on job displacement implied a kind of technological anxiety, which has been reported by other literature on AI adoption [42]. This dual perception of being both positive and concerned among students indicated a transitional stage in which they recognized the opportunities and challenges associated with AI integration.

3.4. PERCEIVED USEFULNESS OF ARTIFICIAL INTELLIGENCE

Perceived usefulness was assessed to determine how much students feel AI helps with career development and operational performance. The results were shown in Table 3 and Figure 2.

Table 3

Table 3 Perceived Usefulness of AI (Mean ± SD)

Dimension	Mean	SD	Interpretation
AI improves employability	4.2	1	High
AI enhances career opportunities	4.1	1.1	High
AI increases operational efficiency	4	1.1	High
AI supports decision-making	3.9	1.2	Moderate–High
Overall Usefulness Score	4.05	1.1	High

Figure 2

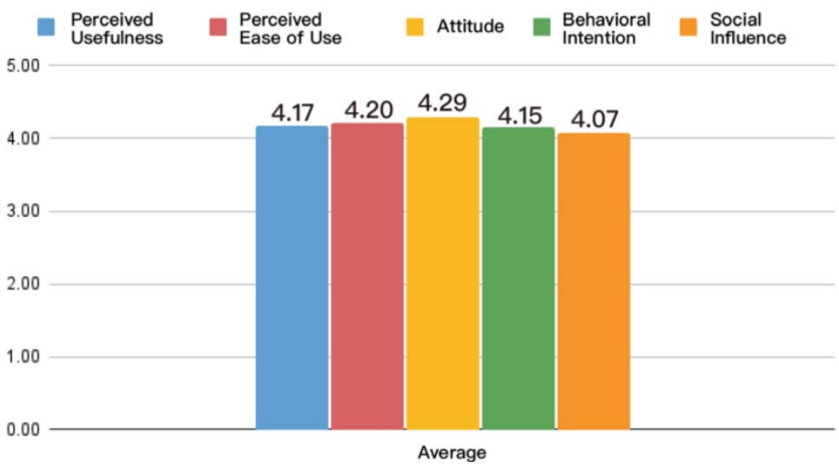

Figure 2 Perceived Usefulness of AI

The findings showed that students consider AI very useful, particularly for future work and employability. The high mean scores (>4.0) indicate alignment with the TAM model, in which perceived usefulness is one of the key factors affecting technology adoption [43]. Their view is that it is a tool that increases productivity and facilitates data-driven decision-making, underscoring its importance for current management in the hospitality sector. These results align with studies that identify AI as a factor in achieving a competitive advantage and transforming human resources in this branch.

3.5. RELIABILITY ANALYSIS

Evaluation of the measurement scale´s internal consistency was done by measuring Cronbach´s alpha coefficient. The results were shown in Table 4.

Table 4

Table 4 Reliability Statistics

Construct	Cronbach's Alpha (α)	Interpretation
AI Awareness Scale	0.979	Excellent
Perception Scale	0.979	Excellent
Usefulness Scale	0.979	Excellent
Overall Scale	0.979	Highly Reliable

The Cronbach's alpha value of 0.979, which indicates excellent internal consistency, is much higher than the acceptable standard of 0.70. This shows that the items are highly correlated and reliable for measuring the appropriate constructs. High reliability enhances the validity of the findings and supports the Robustness of subsequent statistical analysis. Because such high alpha values represent a well-structured instrument, we based our position on psychometrics as evidence-based practice [38].

4. DISCUSSION

The present study offers a thorough, fact-based overview of hospitality students' perceptions across sectors and their awareness of the applicability of Artificial Intelligence (AI) technologies in the hospitality industry. The main outcomes were derived as follows: First, students, by and large, remain neither low nor high in AI awareness, indicating that they are quite exposed to AI tools, with major examples including chatbots, robotics, and predictive analytics. Second, most students expressed positive views of AI technology, appreciating its potential to improve service quality, operational efficiency, and customer experience. Finally, the results also reveal high levels of perceived usefulness, especially where employability is anticipated or where career development possibilities are evident. All these findings therefore generally indicate that students not only have knowledge of existing AI technologies but also conceptualize their significance and relevance for future use in the field of hospitality. This collected data evidence indicates that these knowledgeable competencies can only provide value added from accessing and responding to technology use demanded by industry prospective employees, thus, despite this optimistic perspective, which demonstrates that there are still varying responses across, clearly suggesting disparities in the experience of educators, hence the reason put forward a proposal to foster while(alert).

The observations from this investigation support earlier studies on AI adoption in hospitality and have real-world implications [44, 45]. Highlighted a systematic review, where it was shown that the knowledge of AI technology at large in the sector of hospitality studies is rising, but it is non-uniform across different academic settings. In fact, the current study confirmed this assessment by revealing a moderately high level of awareness, coupled with variability in responses, which exposed evident disparities and an institutional readiness gap [45]. AI-based technologies are being rapidly adopted in the hospitality industry, but there has been a lag in incorporating these technologies into educational institutions' curricula. The present findings are generally consistent with this observation, as students had a strong awareness of the lack of appropriate, systematic exposure to hands-on AI applications. Prevailingly, Gursoy and Chi (2020) have noted from their study that generally stakeholders within the hospitality sector perceive AI favorably relative to improving quality of service and operational efficiency, among others. Similarly, the enormous perceived usefulness observed in this study also aligns well with the Technology Acceptance Model (TAM), which posits perceived usefulness as a key attribute of technology adoption. However, there are fewer of these earlier exceptional studies that exclusively delve into industry perspectives and/or technological implementation; hence, more research should investigate rigorous, evidence-based, scholar-oriented standpoints, particularly among students in the Indian context.

While awareness and attitudes towards AI are indicative of what might be expected in the future, a closer analysis unveils one crucial aspect: conceptual understanding does not imply operational readiness. This is the key differentiator when gauging where students are at present with respect to AI-ubiquitous hospitality. Students seem to have a sound conceptual understanding of AI-based technologies, as they must have been introduced to them in their program's curriculum. Exposure to media and news on technology trends also provides an opportunity to learn about such systems. Nonetheless, the operational void denoted by the lack of access to use real AI tools such as smart hotel property

management systems, predictive analytics suites, or service robots, etc., for creating genuine practical experiences embodies an irony; basically, it indicates a modest "conceptual knowledge-application gap". At least this kind of pattern has been consistently reported in educational technology literature, whereby there's often a more rapid temporal progression in students becoming aware of/recognizing the existence and significance/perks of new tools, and being enabled to use/practice them. Moderate concern about job dislocation seems to support an argument for accepting the interpretation; however, the dynamic isn't crystal clear, overshadowed by increasing drive modifications.

The findings have relevant implications for hospitality education. The identified awareness–application gap underscores the need to redesign curricula to include AI-related competencies as part of core programs. Current curricula focus mainly on operational and service-oriented skills, and it is increasingly important to challenge the status quo by incorporating AI literacy, data analytics, and digital tools. Educational institutions should adopt experiential learning through simulation-based training, industry collaboration, and hands-on exposure to AI systems, among other approaches, to close the theory-to-practice gap in the AI knowledge base. As well, there is an assumed necessity of rationalizing faculty development programs to equip educators with the necessary expertise/skills required for instructing AI-related content effectively [46]. The introduction of AI in hospitality education shall highlight the importance of being ethical, as well as issues related to privacy/sensitive information when working within/to serve the desires/interests of different market segment(s).

From an industry perspective, our results suggest that employers need to move towards skill-based hiring, with a focus on both digital and traditional service skills. As technology in the hospitality industry advances, advocacy will increase for professionals who can interact effectively with AI systems and leverage data-driven decisions. This gap between awareness and practical skills hints that the industry needs to invest in training and re-training programs. Academia's collaboration with Industry is the key to designing curriculum outputs suiting workforce demands. Lastly, organizational focus should be on creating hybrid roles that leverage AI while keeping the human touch at the core.

This study contributes to the extant literature by being the first to empirically validate the constructs of AI awareness, perception, and perceived usefulness in the context of hospitality education. Current studies on AI adoption have centered on technological perspectives and management aspects; therefore, the current research goes a step further by positioning the student as the focal point of the adoption ecosystem. The awareness construct, along with existing TAM constructs, when combined in a single model to propose an extended framework, provides a better understanding of AI readiness in the educational domain. Further, the results reveal support for the mediation conceptualization: from awareness through perception to perceived usefulness, which provides a solid foundation for future research and model development. Apart from the contributions already stated above, this study makes an additional contribution, highlighting what we term the awareness application gap that is not yet identified by other researchers [47]. With this new insight comes new implications for both educators and academic institutions, addressing both theoretical and practical aspects of their delivery.

Table 5

Table 5 Summary of Key Findings and Implications

Finding	Interpretation	Implication
Moderate–high awareness	Conceptual understanding present	Need for practical exposure
Positive perception	Acceptance of AI benefits	Encourages adoption
High perceived usefulness	AI seen as career-enhancing	Supports curriculum integration
Awareness–application gap	Lack of hands-on skills	Requires experiential learning

5. FUTURE SCOPE

The current study provides a strong empirical foundation by measuring students' awareness, perceptions, and perceived usefulness of AI in hospitality education. Nevertheless, there are areas that need further exploration through research to gain a better grasp on AI readiness specifically at higher education institutions offering hospitality programs. First and foremost, future studies should empirically test the proposed relationships indicated by theoretical frameworks, including AI awareness, exposure, perceived usefulness, and employability readiness, using inferential statistics such as correlation and multiple regression analyses, given the descriptive nature of the current findings reported in this paper. This will also help researchers to ascertain which factors affect most students' AI readiness levels

as well as elucidate proposed causal links based on prior studies. This implies that methodological enhancement is vital, given that the technology adoption literature often tests proposed hypotheses using regression-based models [48, 49]. Second, an important area of study is the development and validation of an AI competency framework specifically focused on students in the hospitality industry. As found in this study, results indicate actual need for facilitated practical connections between conceptual knowledge based on competency mapping approach through integration of dimensions namely data analytics literacies and competencies ethnical adaptabilities or human-centric along with adopted sterilization concept mapping tools could be utilized assist teachers training leaders firm managers institutes etcetera consolidate available materials thereby closing gap between work educational match [11, 19]. Lastly, long-term insights can be gained by utilizing longitudinal perception measurements to capture and develop skill propositions over time. It is important to assess the validity of the taught increased realization requirement, practice limitations, present their solution, they addressed future gaps, submit further, and consider the potential implications and contributions.

In addition, further study could broaden the scope to consider multi-stakeholder perspectives, including faculty members, industry professionals, and alumni, which can provide a more holistic view of AI readiness in hospitality education. Comparative studies of countries/regions would also be interesting and beneficial for gaining insights into the global perspective on curriculum integration and technology adoption. Finally, more advanced analytical approaches, such as SEM, can be used to validate complex relationships among constructs and to test mediation, for example, the role of awareness in linking AI exposure to employability outcomes. This will help to enhance stronger theoretical development for practical applications [50].

6. CONCLUSION

This research offers a comprehensive practical appraisal of students' knowledge, attitudes, and perceived values regarding Artificial Intelligence (AI) technologies in a fast-paced technological environment. The results show that students are consciously aware of AI at a moderate-to-high level, which implies reasonably good knowledge of chatbots, robotics, predictive analytics, and other AI-related applications. In addition, it has been found that students generally have a favorable attitude toward AI technology, recognizing its ability to improve service quality, operational efficiency, and customer experience, as well as access to information and knowledge. Most notably, they observed a high level of AI usefulness related to employability and career, meaning most students see a use for applying AI in their prospective job positions/higher probability of finding future employment. This yield aligns with a multitude of established theoretical frameworks, e.g., the Technology Acceptance Model (TAM), which posits perceived usefulness as one of the main drivers of technology implementation among users in organizations. Nevertheless, there is a discernible gap between awareness, knowledge/attitude/understanding levels or ratings scaled to express opinions regarding functional proficiency/potential performance capacity for layman/application/not expert application.

The implications of these findings are significant. From an academic perspective, there is a clear and immediate need for curriculum transformation that integrates AI literacy, data analytics, and technology-haunted training into the core courses of hospitality programs. From an industry perspective, it highlights skill-based workforce development, where digital competence should be the primary focus, slightly more than traditional service skills. To sum up, even though students in the hospitality field have growing knowledge and a positive perception of AI, their readiness to move into AI-enhanced environments is hampered by insufficient practical exposure. This matter must be achieved through collaborative innovation with industry and competency-based education to develop a capable, future-ready workforce that can succeed in this era of Artificial Intelligence.

AUTHOR CONTRIBUTIONS

RS conceived and designed the research. RS and ASS conducted the experiments. RS analyzed the data. RS and ASS wrote the manuscript. All authors read and approved the manuscript.

CONFLICT OF INTERESTS

None.

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