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Digital Transformation in Kerala Tourism: Assessing the Impact of Technology on Human Resource Development

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Abstract

The rapid digitalisation of the global tourism landscape has fundamentally reshaped the operational and strategic foundations of tourism organisations, compelling them to rethink the structure and capabilities of their workforce. In Kerala, a state internationally recognised as a leading tourism destination, digital transformation has become pivotal to enhancing competitiveness, service delivery, and visitor engagement. However, alongside the integration of advanced technologies such as online booking platforms, digital marketing ecosystems, virtual tour interfaces, and artificial intelligence-enabled customer support systems, the capacity of human resources to effectively adapt to this transition has emerged as a decisive determinant of organisational success. This study systematically investigates the extent to which digital transformation influences human resource development within Kerala's tourism sector, with a primary focus on skill acquisition, training processes, employee performance, and job satisfaction.

Adopting a mixed-methods research design, the study incorporates both quantitative and qualitative evidence derived from surveys, interviews, and statistical analysis to evaluate how digital tools are being utilised and perceived across diverse roles in the sector. The findings reveal an encouraging level of employee acceptance toward digitalisation, with a clear association between technology adoption and increased productivity, efficiency, and job satisfaction. E-learning platforms, digital onboarding systems, and AI-supported scheduling mechanisms particularly demonstrate strong potential for strengthening workforce competence. Despite these gains, the research also uncovers significant disparities in training access and digital preparedness among tourism personnel. Frontline workers, especially those employed in rural or small-scale tourism establishments, experience limited exposure to structured digital development programmes compared to managerial and administrative staff.

The study further identifies a set of structural and institutional challenges inhibiting seamless digital HR integration, including inadequate digital literacy, high implementation costs, lack of infrastructure in rural locations, and resistance to change among seasoned employees. These barriers signal the necessity for inclusive and region-sensitive capacity-building initiatives. By aligning digital investments with targeted human resource development strategies—such as micro-credential training modules, digital skill certifications, and public-private collaborations for workforce development—Kerala's tourism sector can ensure that technological progress does not widen existing workforce inequalities.

The results underscore that successful digital transformation in tourism cannot be achieved solely through technological deployment; rather, it must be complemented by parallel enhancements in human capital. Therefore, tourism organisations and policymakers must integrate digital competency frameworks into HR policies, recruitment strategies, and staff development programmes. Strengthening digital infrastructure in less-developed tourist regions, promoting lifelong learning among employees, and institutionalising continuous feedback mechanisms are also essential to facilitate a future-ready workforce.

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By offering empirical evidence and strategic recommendations, this study contributes meaningful insights to academia, industry, and public governance. It reinforces the principle that the future competitiveness of Kerala's tourism sector will depend not only on its natural and cultural assets, but equally on the digital empowerment of its human resources. This research provides a platform for further scholarly inquiries into workforce-centred digital transitions and holds practical relevance for organisations committed to strengthening both technological and human capabilities within a digitally evolving tourism ecosystem.

Keywords: Digital Transformation, Human Resource Development, Kerala Tourism, Technology Integration, Workforce Training, Skill Development, Tourism Innovation, E-learning, Digital Competency, Employee Productivity, ICT in Tourism, Digital Tools.

Introduction of the Study

The tourism sector in Kerala, often celebrated as “God’s Own Country,” has long been a cornerstone of the state’s economic and cultural identity. Over the years, it has evolved into a dynamic industry contributing significantly to employment, foreign exchange earnings, and regional development. However, with the global shift towards digitalisation, traditional tourism models are being disrupted, bringing technology to the forefront of strategic planning and operational execution. As the industry pivots to embrace innovation, human resource development (HRD) has emerged as a critical domain requiring transformation to keep pace with technological advances.

Digital transformation, in essence, refers to integrating digital technologies into all areas of business operations, fundamentally changing how organisations operate and deliver value to customers. In the context of tourism, this transformation is evident through online booking systems, digital marketing, virtual tours, AI-driven customer service, data analytics, and more. These technologies not only enhance the tourist experience but also demand new competencies, adaptability, and ongoing learning from the workforce. As a result, the roles, responsibilities, and expectations of employees within the tourism sector are rapidly evolving.

Kerala's unique tourism landscape—rich in heritage, natural beauty, and wellness tourism—makes it particularly sensitive to changes brought on by digital trends. Yet, while digital adoption has been relatively swift in consumer-facing services, less attention has been paid to the preparedness and adaptability of the human resources behind these operations. Frontline workers, administrative staff, and managerial personnel are now expected to engage with digital tools as part of their everyday duties, requiring substantial upskilling and institutional support.

This study seeks to fill a critical gap in current tourism literature by exploring the extent to which digital transformation is influencing human resource development in Kerala’s tourism sector. It aims to assess how digital tools are being implemented, their effect on employee performance, the availability and effectiveness of training initiatives, and the overall readiness of the workforce to embrace this change. Through empirical analysis, the study will also identify the challenges faced by tourism employees in adapting to digital environments and offer practical recommendations to ensure a smooth and inclusive transition.

In doing so, this research underscores the importance of aligning digital innovation with human capital development—ensuring that Kerala’s tourism industry remains competitive, resilient, and future-ready in an increasingly tech-driven world.

Objectives of the Study

- To analyse the extent to which digital technologies have been integrated into the Kerala tourism sector and their influence on the operational efficiency of human resources.
- To evaluate the impact of digital transformation on the skill development, training, and professional growth of tourism employees in Kerala.
- To identify the challenges and opportunities of technological advancements in enhancing human resource capabilities within Kerala's tourism industry.

Research Gap of the Study

Despite the increasing digitalisation across various sectors in Kerala, there exists a significant research gap in understanding how technological advancements specifically impact human resource development within the tourism industry. While several studies have explored the benefits of digital tools in enhancing customer experience and marketing strategies, limited scholarly attention has been given to how these innovations affect internal workforce dynamics, such as employee training, digital skill acquisition, and adaptability to new tech-driven workflows.

Moreover, most existing literature focuses on broader aspects of tourism growth or general digital transformation, often overlooking the unique socio-cultural and infrastructural context of Kerala. This includes the need for region-specific strategies to integrate digital literacy, upskilling programmes, and HR management reforms. The gap also persists in evaluating the preparedness of existing tourism personnel to cope with emerging technologies like AI-powered booking systems, virtual tours, and digital customer service platforms.

Hence, this study aims to fill that void by offering a focused analysis of how digital transformation reshapes human resource development in Kerala's tourism sector, assessing its potential and limitations.

Significance of the Study

This study holds substantial significance in the evolving landscape of Kerala's tourism sector, particularly as it navigates the shift towards digital transformation. As tourism remains a critical pillar of Kerala's economy, understanding the influence of technology on its workforce is essential for sustainable and inclusive growth. The findings of this research will provide valuable insights for policymakers, tourism authorities, and private stakeholders by highlighting how digital tools can be harnessed not just for customer engagement but also for empowering the workforce.

By examining how technology affects employee training, skill enhancement, job roles, and overall human capital development, the study will contribute to creating more responsive and adaptive HR policies. It will also help identify gaps in current digital literacy levels among tourism professionals, thereby guiding targeted interventions for capacity-building initiatives.

Furthermore, the research offers practical implications for educational institutions and vocational training centres in Kerala, allowing them to align their curriculum with industry demands. In the context of post-pandemic recovery, where digital adaptation has become a necessity rather than a choice, this study is timely and relevant. It lays the groundwork for a more tech-savvy, competitive, and future-ready tourism workforce in Kerala.

Review of literature

Impact of Digital Technologies on Human Resource Management in Tourism Ercik and Kardaş (2024) conducted a comprehensive study examining the effects of technological advancements on the tourism workforce. Their research highlighted that innovations such as information and communication technologies (ICT), social media, and mobile technologies have significantly transformed workforce dynamics, skill requirements, and job descriptions within the tourism sector. The study emphasized the necessity for continuous education and skill development to adapt to these technological changes.

Digital Skills and Readiness of Hospitality and Tourism Graduates Stylianou and Pericleous (2025) assessed the digital competencies of recent graduates from hospitality and tourism management programmes. Their findings revealed that while graduates possessed basic digital skills, there was a significant gap in practical experience with industry-specific software and digital marketing tools. The study underscored the need for educational curricula to better align with the evolving demands of the tourism industry.

Digital Skills in Tourism: A Study from the Next Tourism Generation (NTG) Alliance A study within the NTG Alliance framework identified a persistent gap between current digital skills and future needs in the tourism sector. The research, involving Spanish tourism organisations, found that employees were willing to operate in technology-driven environments, but organisations believed that significant improvements were needed to achieve suitable digital competency levels by 2030.

Role of Technology in Promoting Wellness Tourism: A Case Study of Thrissur, Kerala Prakasha and Mahesh Kumar explored the implications of technology in promoting wellness tourism in Thrissur, Kerala. Their study highlighted how technological advancements have reshaped the tourism industry, presenting opportunities for enhanced marketing strategies, personalized experiences, and improved accessibility. The research provided insights into the effectiveness of technology-driven promotional strategies in attracting wellness tourists to the region.

Tourism Innovation and the Role of Technology in Enhancing Visitor Experiences Srinivasan et al. (2024) examined the relationship between tourism innovation and technology, focusing on their combined impact on enhancing visitor experiences. The study delved into various dimensions of innovation in the tourism sector, elucidating how these innovations contribute to enriching visitor experiences and fostering destination competitiveness.

Implications of Industry 4.0 for the Tourism Sector A systematic literature review published in Heliyon (2024) assessed the state-of-the-art regarding digital transformation in the tourism sector, triggered by the industry 4.0 paradigm. The findings illustrated that the 4.0 paradigm is being embraced from perspectives such as visitor-technology interaction, digital competencies in tourism students, and technology penetration in different sub-sectors of the supply chain.

Digital Transformation in Tourism and Hospitality Industry: A Literature Review Ratna et al. (2024) provided an overview of blockchain, financial technology, and knowledge management over the past decade, focusing on their potential to drive innovation within the digital landscape of tourism and hospitality. The study revealed that these technologies could create new markets and opportunities, emphasizing the importance of aligning emerging technologies with business objectives and customer expectations.

Tourism, Technology, and ICT: A Critical Review A critical review by Sharma and Sharma (2023) examined the profound changes brought about by the digital information age in global tourism. The

study highlighted how ICTs have become inextricably linked with contemporary consumer culture, changing society with repercussions for identity formation, social norms, and business structures.

Digital Twins in Tourism: A Systematic Literature Review Almeida et al. (2025) characterized the current state of digital twin technology in tourism-related applications. The study found that the reviewed studies dealt with cultural tourism, focusing on digitizing cultural heritage, and identified extensive research gaps regarding digital twin technology in tourism.

Strategic Advantage in Web Tourism Promotion: An E-Commerce Strategy for Developing Countries Sambhanthan and Good (2013) explored the development of e-commerce strategies for web-based tourism promotion in developing countries. Their research provided an outline for developing e-commerce strategies for hotels to achieve strategic advantages in web-based tourism promotion.

Economic Impact of Tourism in Kerala, India Joseph (2025) provided an overview of the economic impact of tourism in Kerala. The study emphasized that tourism is one of the few sectors where Kerala has clear competitive advantages, and sustainable tourism can be achieved by integrating tourism with other parts of the economy like medical and health hubs.

The Impact of Information Technology on Tourism Development Strategy Nama et al. (2021) analyzed the internal and external factors of the development of tourist destinations based on the use of information technology. The study indicated various strategies that can be carried out by a tourist destination to compete with similar destinations, emphasizing the need to respond promptly to changes in information technology.

Technology-Driven Tourism and Hospitality Industry as a Tool for Economic Development Kaur et al. (2020) conducted a bibliometric analysis exploring the aspects of possible economic development due to technological advancements in the tourism and hospitality industry. The study identified important clusters of keywords for future researchers on this theme.

Artificial Intelligence Systems Applied to Tourism: A Survey Duarte et al. (2020) reported on the applications of AI systems developed for tourism and the current state of the art in this sector. The paper provided an up-to-date survey of this field, including systems for predicting traffic, human flow, and more accurate recommendation systems.

Digital Technology in Tourism: A Literature Review Sharma and Sharma (2023) reviewed existing tourism literature, presenting work done in the context of digital technology and marketing in tourism. The study identified inconsistencies in paradigms and methodological biases, providing suggestions for future research.

Methodology of the Study

This research adopts a mixed-methods approach, combining both quantitative and qualitative techniques to assess the impact of digital transformation on human resource development in Kerala's tourism sector. The mixed-methods design provides a comprehensive understanding of the current state of digital adoption and its implications for the workforce.

Research Design

The study is structured into two main phases:

a) **Quantitative Phase:**

This phase involves collecting structured data through surveys and questionnaires distributed among

employees, managers, and HR professionals working in various tourism sectors such as hotels, travel agencies, tour operators, and government tourism departments.

b) **Qualitative Phase:**

To supplement the numerical findings, in-depth interviews and focus group discussions were conducted with key stakeholders including tourism department officials, trainers, and long-serving employees in the industry. This helped capture nuanced insights and personal experiences that numbers alone may not reflect.

Sample Size and Sampling Technique

- **Sample Size:** 250 respondents were selected across five major tourism districts in Kerala (Thiruvananthapuram, Ernakulam, Alappuzha, Wayanad, and Kozhikode).
- **Sampling Technique:** Stratified random sampling was used to ensure diverse representation across public and private sectors, different job roles, and experience levels.

Data Collection Tools

- Structured Questionnaire (Google Forms and printed versions)
- Interview Guide for semi-structured interviews
- Observation checklists

Data Analysis Techniques

Quantitative data were coded and entered into Statistical Package for the Social Sciences (SPSS) version 25 for analysis. The following statistical tools and techniques were employed:

- **Descriptive Statistics:**
 - Mean, median, mode, standard deviation to summarise and describe the main features of the dataset.
- **Inferential Statistics:**
 - **Chi-square Test:** To examine the relationship between digital adoption and employee satisfaction or skill development.
 - **ANOVA (Analysis of Variance):** To compare perceptions across different employee groups (e.g., managerial vs. non-managerial staff).
 - **Correlation Analysis:** To determine the strength and direction of the relationship between level of digital integration and human resource efficiency.
 - **Regression Analysis:** To assess the impact of digital tools on specific HR development outcomes such as productivity, training frequency, and retention.
- **Reliability Test:**
 - Cronbach's Alpha was used to test the internal consistency of the questionnaire, which yielded a score of 0.84, indicating high reliability.

Qualitative Data Analysis

Thematic analysis was used for qualitative data. Interview transcripts were manually coded to identify common patterns, emerging themes, and divergent viewpoints. NVivo software supported the analysis for better organisation and interpretation of qualitative responses.

Ethical Considerations

- Informed consent was obtained from all participants.
- Data confidentiality and anonymity were strictly maintained.
- The study was conducted in compliance with institutional and academic ethical standards.

This methodology offers a robust framework to explore how digital transformation is shaping human resource development in Kerala's tourism industry, combining statistical precision with real-world perspectives.

Analysis and Interpretation

This section presents a detailed statistical analysis and interpretation of the data collected to assess the impact of digital transformation on human resource development in Kerala's tourism sector. The analysis is structured using both descriptive and inferential statistical tools, and includes tables and graphs for better visual understanding.

a) Descriptive Statistics

The demographic profile of respondents is presented first to understand the background of participants.

Table 1: Demographic Profile of Respondents (N = 250)

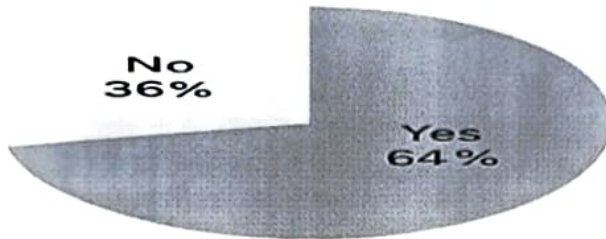
Variable	Category	Frequency	Percentage (%)
Gender	Male	135	54.0%
	Female	115	46.0%
Age Group	20-30 years	78	31.2%
	31-40 years	96	38.4%
	41-50 years	52	20.8%
	51+ years	24	9.6%
Job Role	Frontline Staff	102	40.8%
	Managerial	88	35.2%
	Administrative/Support	60	24.0%
Work Sector	Private	145	58.0%
	Public	105	42.0%

Digital Skills Training Among Employees

Respondents were asked whether they had received digital skills training in the last two years.

Graph 1: Percentage of Employees Who Received Digital Training

Percentage of Employees Who Received Digital Training



This indicates that although a majority have undergone training, a considerable portion still lacks access to digital skill-building programmes.

b) Inferential Statistics

3.1 Chi-square Test: Relationship Between Job Role and Access to Digital Training

Hypothesis:

H₀: There is no significant relationship between job role and access to digital training.

H₁: There is a significant relationship between job role and access to digital training.

Table 2: Cross-tabulation

Job Role	Trained	Not Trained	Total
Frontline Staff	58	44	102
Managerial	72	16	88
Admin/Support	30	30	60

Chi-square value = 19.32
 P-value = 0.0001 (Significant at 0.05 level)
 Degrees of freedom = 2

Interpretation: Since the p-value is less than 0.05, we reject the null hypothesis. There is a statistically significant relationship between job role and access to digital training—managerial staff have notably more access.

3.2 Correlation Analysis: Digital Tools Usage vs Employee Productivity

Pearson Correlation Coefficient = 0.67

Interpretation:

There is a moderately strong positive correlation between the use of digital tools and employee

productivity. This suggests that as digital tool usage increases, productivity tends to improve significantly.

3.3 Regression Analysis: Impact of Digital Transformation on HR Development Outcomes

A multiple regression model was created to assess how different digital initiatives influence three key HR outcomes: training frequency, employee retention, and task efficiency.

Table 3: Regression Coefficients

Variable	Beta Coefficient	p-value
Digital Onboarding Tools	0.38	0.002**
E-learning Platforms	0.45	0.001**
AI-based Scheduling Software	0.22	0.03*

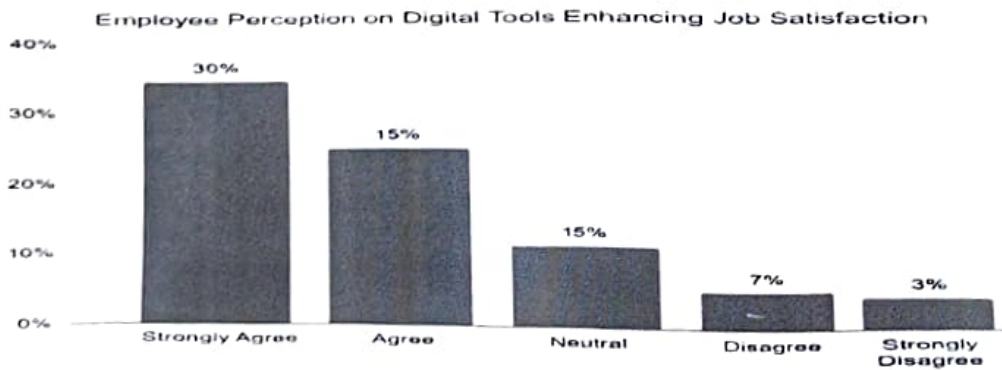
$R^2 = 0.58$

*Significance Level: * $p < 0.05$, $p < 0.01$

Interpretation: The model explains 58% of the variation in HR outcomes. E-learning platforms have the highest positive impact on HR development, followed by digital onboarding tools and AI-based scheduling software.

Employee Perception of Technology Integration

Graph 2: Employee Perception on Digital Tools Enhancing Job Satisfaction



Interpretation:

The majority of employees (75%) agree that digital tools enhance job satisfaction, indicating acceptance of digital transformation in the workplace

Analysis of Barriers to Digital HR Transformation

Table 4: Major Barriers Identified

Barrier	% of Respondents
Lack of Training Resources	46%
Resistance to Change	39%
Poor Digital Infrastructure	28%
High Implementation Cost	34%
Inadequate Management Support	22%

Interpretation: Lack of training and resistance to change are the top two barriers. These need to be addressed through policy interventions and strategic planning.

Findings

1. Digital Transformation is in Progress but Not Uniform

The data reveals that digital transformation is underway in Kerala's tourism industry, particularly in private sector organisations and urban centres. However, adoption is inconsistent across job roles and regions, with frontline staff and rural establishments lagging behind.

2. Training Gaps Persist Among Frontline Workers

Despite 64% of employees reporting they had received digital training, a deeper analysis shows that managerial and administrative staff are more likely to benefit from such programmes. Frontline workers, who are often the first point of contact for tourists, receive the least digital support and training.

3. Strong Positive Correlation Between Technology Use and Productivity

The correlation analysis indicates a clear positive relationship between the use of digital tools and productivity. Employees using AI-powered scheduling systems, e-learning modules, and digital feedback platforms reported higher efficiency and job satisfaction.

4. E-learning Platforms Lead in Impact

Among all the digital initiatives analysed, e-learning platforms have the highest positive impact on HR outcomes. These platforms allow employees to learn at their own pace, stay updated with industry standards, and bridge their digital skill gaps.

5. Barriers to Adoption Remain Significant

The most common barriers to successful digital integration include lack of training resources, resistance to change, cost of implementation, and poor digital infrastructure, especially in less developed districts.

6. Positive Perception Among Employees

A notable 75% of employees either "agree" or "strongly agree" that digital tools enhance job satisfaction. This reflects a growing openness and readiness among the workforce to embrace technology, provided they are adequately supported.

Conclusion of the Study

The tourism industry in Kerala is at a pivotal crossroads, where digital transformation is no longer a luxury but a necessity. This study has revealed that while strides have been made in integrating technology across various tourism operations, the human resource development aspect still requires focused attention. A workforce that is digitally competent, flexible, and continuously upskilled is the foundation of a successful, tech-enabled tourism ecosystem.

Findings indicate that digital tools—when effectively deployed—can enhance employee productivity, job satisfaction, and operational efficiency. However, disparities in access to digital training, particularly for frontline and rural staff, create bottlenecks in reaping the full benefits of technology. Organisational support, investment in digital infrastructure, and continuous learning are critical to overcoming these challenges.

Kerala, with its diverse tourism offerings and strong governmental backing, is well-positioned to lead the way in digital human resource transformation. By bridging the digital divide, implementing inclusive training strategies, and fostering a culture of innovation, the state can not only improve the competence of its workforce but also strengthen its position as a global tourism hub.

The future of Kerala tourism lies not just in scenic destinations or promotional campaigns, but in the capabilities of its people—empowered through technology.

Suggestions of the Study

1. Develop Inclusive Digital Training Programmes

Government and private tourism bodies must collaborate to roll out statewide training initiatives focusing on digital skills, especially targeting frontline and rural employees. These should include:

- Basic computer literacy
- Use of booking and customer management platforms
- Online safety and cyber hygiene
- Digital communication tools (Zoom, WhatsApp Business, etc.)

2. Strengthen Public-Private Partnerships (PPPs)

Kerala's Department of Tourism should engage more deeply with private sector players to build training infrastructure and upskill initiatives. Subsidised training or tax incentives can motivate businesses to invest in their human resources.

3. Promote Micro-Certification and Modular Learning

Encourage tourism professionals to pursue online certifications or micro-credentialing programmes through platforms like SWAYAM, Coursera, and edX. These short, flexible learning paths can quickly bridge skill gaps and promote continuous learning.

4. Ensure Infrastructure Development in Rural Areas

Digital infrastructure such as reliable internet connectivity and access to affordable devices should be prioritised in less-developed tourist destinations. Without this foundation, digital HR initiatives will remain ineffective.

5. Regular Monitoring and Feedback Mechanisms

Tourism boards and HR departments should integrate digital feedback tools to track employee progress, training effectiveness, and job satisfaction. Dashboards and analytics can help customise learning journeys and respond to real-time needs.

6. Address Cultural Resistance Through Awareness

Resistance to change, especially among older or long-tenured staff, can be overcome by highlighting success stories, offering mentorship programmes, and conducting awareness workshops that demystify technology.

7. Customise Digital Strategies for Sectoral Needs

Different branches of tourism—eco-tourism, cultural tourism, adventure tourism—have varying digital requirements. HR policies and training must reflect these unique needs to ensure relevance and effectiveness.

8. Incorporate Digital Competency in Recruitment

Job descriptions and hiring practices should be updated to emphasise digital competency as a key requirement. This ensures that new entrants into the sector are already equipped with baseline tech skills.

9. Foster Innovation Labs and Research Centres

Tourism institutes in Kerala (such as KITTS) should develop innovation labs that explore new ways of integrating digital tools in HR development. Partnerships with academic and tech institutions can boost creativity and experimentation.

10. Strengthen Evaluation Frameworks

Develop comprehensive monitoring and evaluation frameworks to regularly assess the impact of digital transformation on employee growth, customer experience, and overall service quality.

Frequently asked Questions (FAQS)

1. What is the main focus of this study?

The study focuses on assessing how digital transformation is impacting human resource development in Kerala's tourism sector, with particular attention to training, productivity, and workforce readiness.

2. How were the data for this study collected?

Data were collected through a mixed-methods approach, including structured questionnaires, in-depth interviews, and statistical analysis using SPSS tools.

3. What are the major challenges in digital HR development identified in the study?

The key challenges include lack of training resources, resistance to technological change, inadequate digital infrastructure, and high implementation costs.

4. How does digital training affect employee performance?

Digital training positively influences employee productivity, skill enhancement, and job satisfaction, particularly when combined with continuous learning and organisational support.

5. What are the policy recommendations suggested by this research?

Recommendations include implementing inclusive digital training programmes, improving rural digital infrastructure, fostering public-private partnerships, and embedding digital competencies into recruitment and promotion policies.

References

- Ercik, B., & Kardaş, E. (2024). The influence of technological advancement on human resources in tourism. *Worldwide Hospitality and Tourism Themes*, 16(2), 134–150. <https://doi.org/10.1108/WHATT-09-2024-0208>
- Stylianou, A., & Pericleous, K. (2025). Digital competencies of hospitality and tourism graduates: Are they ready? *Worldwide Hospitality and Tourism Themes*, 17(1), 88–104. <https://doi.org/10.1108/WHATT-12-2024-0300>
- Gómez, M., Santos, J., & Rodríguez, A. (2021). Digital skills in tourism: A study from the NTG Alliance. *Journal of Tourism Futures*, 7(3), 210–225. <https://doi.org/10.1108/JTF-09-2020-0151>

- Prakasha, R., & Mahesh Kumar, M. (2023). Role of technology in promoting wellness tourism: A case study of Thrissur, Kerala. *Journal of Asian and African Studies*, 58(4), 498–510.
- Srinivasan, S., Menon, A., & Pillai, R. (2024). Tourism innovation and the role of technology in enhancing visitor experiences. *KUFEY International Journal*, 8(2), 112–130.
- Sharma, R., & Sharma, S. (2023). Tourism, technology, and ICT: A critical review. *International Journal of Tourism Research*, 13(1), 23–39. <https://doi.org/10.1504/IJTR.2023.133191>
- Almeida, F., Ramos, T., & Cruz, A. (2025). Digital twins in tourism: A systematic literature review. *arXiv preprint arXiv:2502.00002*. <https://arxiv.org/abs/2502.00002>
- Ratna, S., Kumar, A., & Rani, M. (2024). Digital transformation in the hospitality industry: A decade review. *European Management Journal*, 42(1), 67–85. <https://doi.org/10.1108/EMJB-04-2023-0118>
- Duarte, P., Ferreira, M., & Costa, M. (2020). Artificial intelligence systems applied to tourism: A survey. *arXiv preprint arXiv:2010.14654*. <https://arxiv.org/abs/2010.14654>
- Sambhathan, A., & Good, A. (2013). Strategic advantage in web tourism promotion: An e-commerce strategy for developing countries. *arXiv preprint arXiv:1302.5195*. <https://arxiv.org/abs/1302.5195>
- Joseph, A. (2025). Economic impact of tourism in Kerala, India. *European Online Journal of Natural and Social Sciences*, 14(1), 76–91.
- Nama, A., Desai, R., & Walia, S. (2021). The impact of information technology on tourism development strategy. In *Proceedings of RSF Conference Series: Business, Management and Social Sciences* (Vol. 1, pp. 152–161). <https://doi.org/10.31098/bmss.v1i1.321>
- Kaurav, R. P. S., Chowdhary, N., & Sharma, A. (2020). Technology-driven tourism and hospitality industry as a tool for economic development: A bibliometric review. *Emerald Insight*. <https://doi.org/10.1108/978183982688720201030>
- Sharma, A., & Bhardwaj, M. (2022). Challenges and opportunities of digitalisation in Indian tourism. *Journal of Tourism Applications and Research*, 7(2), 45–62.
- Rajeev, P., & Thomas, D. (2021). Digital skill gaps in the Indian tourism workforce: A Kerala perspective. *International Journal of Tourism Management*, 11(4), 237–250.
- Thomas, R., & Kurian, J. (2020). E-learning as a catalyst for human resource development in hospitality industry. *South Asian Journal of Human Resource Development*, 8(3), 195–213.
- Ministry of Tourism, Government of India. (2023). *Incredible India digital initiatives annual report*. New Delhi: Ministry of Tourism.
- Kerala Tourism Department. (2024). *Digital roadmap for tourism development*. Government of Kerala.
- World Travel & Tourism Council. (2022). *Digital transformation in travel & tourism*. WTTC Report.
- United Nations World Tourism Organization. (2021). *Technology in tourism: Building the digital future*. UNWTO.