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Employee Capacity Building and Smart City Tourism Development: A Comparative Analysis of Nigeria and India

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Abstract: *The emergence of smart city initiatives has transformed the tourism industry by integrating digital technologies into tourism services, destination management, and tourist experiences. However, the successful implementation of smart tourism systems requires a workforce equipped with appropriate technological competencies and professional skills. This study investigates the influence of employee capacity building on smart city tourism development, with digital competence serving as a mediating variable. The study adopts a comparative approach using data collected from tourism employees in Nigeria and India. A quantitative research design was employed, and data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with multi-group analysis to examine cross-country differences. The findings revealed that employee capacity building significantly enhances digital competence among tourism employees and positively influences smart city tourism development in both countries. Digital competence was also found to significantly contribute to smart tourism development and partially mediate the relationship between employee capacity building and smart tourism outcomes. The comparative analysis indicates that the direct influence of employee capacity building on smart tourism development is stronger in India, reflecting the country's relatively advanced digital tourism infrastructure and smart city initiatives. Conversely, digital competence demonstrates a stronger mediating role in Nigeria, suggesting that improvements in workforce digital skills could substantially accelerate smart tourism adoption in the country. The study contributes to smart tourism and human capital literature by demonstrating the critical role of employee capacity building in enabling technology-driven tourism transformation. The findings provide practical insights for policymakers and tourism stakeholders seeking to enhance smart tourism development through workforce training and digital skill development.*

Keywords: Smart tourism development; employee capacity building; digital competence; human capital development; smart cities; tourism workforce; Nigeria; India; PLS-SEM.

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INTRODUCTION

One of the most active areas of the world economy is tourism, which is crucial for job generation, economic growth, and cross-cultural interaction. Rapid technology breakthroughs, digital connectivity, and the emergence of smart city concepts have all had a big impact on the tourism industry over the past ten years. The concept of smart tourism, which focuses on utilizing smart technologies to enhance the tourism experience, better manage tourism, and boost tourism competitiveness, was introduced by the adoption of cutting-edge digital technologies like artificial intelligence, big data, IoT, and mobile technologies (Gretzel, Sigala, Xiang, & Koo, 2015; Buhalis & Amaranggana, 2015). Real-time information interchange is made possible by smart tourism environments, which improve communication between travelers, service providers, and tourism management companies. According to recent research, digital technology has a big impact on how the tourism sector is formed and operates. In a rapidly globalized tourist market, the digitization of tourism services makes it possible for travel destinations to offer cutting-edge travel experiences, optimize travel operations, and boost destination competitiveness (Wu, Xu, Zhao, Li, & Law, 2024). Furthermore, tourist locations can create data-driven decision-making systems that improve service delivery and visitor experience by integrating smart technologies like artificial intelligence and predictive analytics (Tang, 2024; Cheng, Li, & Wang, 2024). Technological advancements in the tourism sector have profoundly altered and impacted tourism ecosystems, opening up new avenues for innovation in travel destinations, particularly in developing nations like Nigeria, where young travelers are taking advantage of cutting-edge ride-sharing services in numerous cities across the country (Agina & Iluno, 2023).

Even while smart tourism technologies are becoming more and more important, it is clear that the availability of qualified human resources in the nation who can handle these technologies is also essential to the success of smart tourist systems. It is also clear that the tourism business is very service-oriented, and that improving service quality and visitor happiness greatly depends on the abilities, expertise, and professional competence of employees (Baum, 2020). Additionally, it is clear that workers in the tourist sector must have advanced digital skills in order to use the growing significance of digital technology in the sector.

Thus, the role of human capital development is significant in helping tourism destinations respond to the challenges of technology transformation. The capacity building of employees through training and other learning processes is also significant in helping employees develop skills and competencies to respond to the challenges of technology transformation in tourism destinations. According to the Organization for Economic Co-operation and Development (OECD), investments in workforce skills and training are significant in helping the tourism workforce respond to the challenges of technology transformation in the tourism sector (OECD, 2021). Tourism organisations that invest in workforce training are in a position to respond to the challenges of technology transformation in the tourism sector.

Current studies have emphasized the increasing value of digital competence in tourism organisations. Digital competence is defined as "the capacity of individuals to effectively use digital technologies, to analyze digital information, and to apply knowledge of technology in their professional activities." In smart tourism environments, digital competence enables tourism employees "to use digital tourism platforms, tourism information systems, and interact with tourists in digital channels" (Mariani, Baggio, Fuchs, & Höepken, 2021). Moreover, it is argued that tourism employees with high digital competence have more potential "to assist in the implementation of smart tourism technologies and tourism innovation" (Koseoglu, Rahimi, Okumus, & Liu, 2025).

The emergence of Industry 4.0 technologies such as artificial intelligence, blockchain, augmented reality, and location-based services has further accelerated digital transformation in tourism. These technologies have created new tourism service models and enhanced the capacity of destinations to deliver personalized and interactive tourism experiences (Vujičić et al., 2024). At the same time, smart tourism technologies have been shown to significantly influence tourists' travel behaviour and decision-making processes, highlighting their growing importance in modern tourism ecosystems (Novianti & Rafdinal, 2022). While technological innovation remains a central component of smart tourism development, scholars increasingly emphasize that human capital is equally important in enabling smart tourism transformation. The integration of digital technologies into tourism operations requires employees who possess not only technical knowledge but also adaptive skills that allow them to respond to rapidly changing technological environments. Consequently, tourism organisations must invest in workforce development strategies that enhance employees' technological competencies and innovation capabilities. This issue is particularly important for emerging economies where tourism sectors are undergoing rapid digital transformation but often face challenges related to limited technological infrastructure and workforce skills. Countries like Nigeria and India are increasingly investing in smart city initiatives that integrate digital technologies into urban services, including tourism. India's Smart Cities Mission has introduced several initiatives aimed at improving urban infrastructure, digital services, and tourism experiences. Similarly, Nigeria has begun exploring smart tourism initiatives in major urban centers such as Lagos, Abuja, Calabar, and Enugu.

However, even with an increasing investment in digital tourism infrastructure, many developing countries continue to face challenges related to digital skills gaps and limited workforce training in the tourism sector. Research indicates that insufficient digital competencies among tourism employees remain a major barrier to the successful implementation of smart tourism technologies in developing economies (Dzikhanbayeva, 2025). Consequently, improving workforce digital skills through employee capacity building is essential for enabling tourism destinations to fully benefit from smart tourism technologies.

Despite the fact that previous studies have examined various aspects of smart tourism development, including technological infrastructure, digital platforms, and tourist experiences, relatively limited attention has been given to the role of employee capacity building as a driver of

smart tourism transformation, particularly in emerging economies. A cross-national comparative studies examining how human capital development influences smart tourism development across different institutional contexts remain scarce. To address this research gap, this study investigates the influence of employee capacity building on smart city tourism development, with digital competence acting as a mediating variable. The study further adopts a comparative approach by examining the relationship between these constructs in Nigeria and India. By integrating human capital development with smart tourism frameworks, this study contributes to the growing body of literature on digital tourism transformation and provides insights into how workforce development can support smart tourism initiatives in emerging tourism economies.

Hypotheses Development

Employee Capacity Building and Digital Competence

Training programmes, professional development exercises, and knowledge-sharing platforms are all part of employee capacity building, which aims to improve workers' abilities. In the context of digital transformation, where workers must acquire digital skills and technology literacy, these activities are especially crucial. Research has demonstrated that employees' technological proficiency and capacity to embrace digital innovations are greatly enhanced by training and professional development (Mariani et al., 2018; Sigala, 2018). Through capacity-building programs, staff members can learn the skills needed to manage digital platforms, run smart tourism systems, and provide technology-driven tourism services. Therefore, it is anticipated that staff capacity building will improve tourist workers' digital competency.

H1: Employee capacity building positively influences digital competence.

Employee Capacity Building and Smart City Tourism Development

Employee capacity building increases workers' ability to use cutting-edge technologies, improve service quality, and support organizational success. In the tourist industry, competent workers are essential for managing digital tourism platforms and putting smart tourism projects into action. Human capital development is a major factor in tourism innovation and destination competitiveness, according to research (Baum, 2015). Investing in staff training and skill development puts tourism organizations in a better position to deploy smart tourism technologies and enhance visitor experiences. Thus, it is anticipated that employee capacity building will have a direct impact on the growth of smart city tourism.

H2: Employee capacity building positively influences smart city tourism development.

Digital Competence and Smart City Tourism Development

The ability of employees to manage information systems, use digital technologies, and apply technological knowledge in their professional tasks is referred to as "digital competence." Employees with digital competency can operate smart tourism platforms, analyze tourism data, and provide tourists with individualized services in smart tourism surroundings. Gretzel et al. (2015) state that the effective deployment of smart tourism ecosystems depends on the digital capabilities of tourism stakeholders. Strong digital skills enable employees to use smart

technologies to improve tourism services and increase destination competitiveness. Thus, it is anticipated that digital competency would have a favorable impact on the growth of smart city tourism.
H3: Digital competence positively influences smart city tourism development.

Mediating Role of Digital Competence
Through digital competency, employee capacity building may also have an indirect impact on the growth of smart tourism. Programs for skill development and training increase employees' digital literacy, which in turn improves their capacity to use smart tourism technologies. According to earlier studies, one important way that human capital development supports technological innovation and organizational success is through digital competence (Mariani et al., 2018). Therefore, it is anticipated that the relationship between staff capacity building and the growth of smart tourism will be mediated by digital competence.
H4: Digital competence mediates the relationship between employee capacity building and smart city tourism development.

Cross-Country Differences
When it comes to smart city efforts, tourism development, and digital infrastructure, Nigeria and India are very different. While Nigeria is still in the early phases of adopting smart tourism, India has undertaken a number of smart city initiatives targeted at enhancing urban infrastructure and tourism services. These contextual variations could affect how strongly staff capacity building, digital competency, and smart tourism development are related.
H5: The relationship between employee capacity building and smart city tourism development differs between Nigeria and India.

Smart Tourism and Smart City Tourism Development
By combining digital technology, big data analytics, artificial intelligence, and smart infrastructure, smart tourism has drastically changed the travel and tourism sector. According to Gretzel et al. (2015) and Buhalis & Amaranggana (2015), smart tourism is frequently defined as the use of cutting-edge information and communication technology to improve visitor experiences, enhance destination management, and promote sustainable tourist development. According to recent study, smart tourism destinations depend on networked digital ecosystems that enable real-time information sharing between travelers, travel agencies, and destination management organizations (DMOs). Smart tourism ecosystems incorporate a variety of stakeholders, such as local governments, travel agencies, and communities, to improve destination competitiveness and provide technology-enabled tourism services (Bhuiyan et al., 2022).

Travel destinations are able to provide individualized travel experiences and increase service efficiency because to smart technology including mobile applications, the Internet of Things (IoT), artificial intelligence, and big data analytics. By providing real-time monitoring of visitor flows, transportation networks, and tourism infrastructure, these technologies also improve destination management (Carballido & Guevara-Plaza, 2021; El Archi et al., 2023). By offering interactive

services, personalized information, and real-time travel support, smart tourism technologies greatly improve visitor experiences, according to recent empirical study. In urban tourism settings, technology-enabled services increase visitor happiness and boost destination competitiveness (Li et al., 2023; Ramasamy et al., 2024).

Additionally, smart tourism development has been found to be a major factor in destination competitiveness and economic growth, especially in emerging economies looking to update its tourism infrastructure and draw in foreign visitors (Femenia-Serra & Neuhofer, 2020; Sigala, 2020). Through technical innovation, digital connectivity, and data-driven service delivery, smart tourism initiatives enable places to set themselves apart. The increasing integration of digital technologies and tourism operations is highlighted by recent assessments of research on digital tourism. The adoption of intelligent technologies that facilitate decision-making, enhance tourism services, and develop new tourism experiences is known as digital transformation in the tourism industry (Wu et al., 2024).

More recent research has also shown how smart technologies and artificial intelligence may help with smart destination management and enhance the provision of tourism services. In order to help travel destinations adjust to changing technology environments, smart tourism ecosystems incorporate AI-driven systems, innovation hubs, and digital platforms (García-Milon et al., 2025). Despite these technological developments, the availability of qualified human resources capable of overseeing digital tourist infrastructure and providing technology-enabled services is crucial to the effective deployment of smart tourism systems.

Human Capital and Employee Capacity Building in Tourism

It has long been acknowledged that human capital development has a crucial role in both organizational performance and tourism competitiveness. Employee knowledge, skills, and competences are crucial for providing high-quality tourism experiences because the tourism business is known for its intense service interactions (Baum, 2020). Enhancing employees' knowledge, skills, and competencies through training, professional development programs, and learning initiatives is referred to as employee capacity building. Building capacity enhances organizational effectiveness, innovation, and service quality in tourism organizations (Baum & Hai, 2020). Human capital development is crucial for enhancing tourist performance and competitiveness, according to recent studies. Businesses in the tourism industry are better equipped to implement cutting-edge technologies and enhance service delivery when they invest in the professional development and training of their staff (Mariani et al., 2021). Research indicates that human capital fosters tourism innovation by assisting firms in developing new services and adapting to technological developments (Sigala, 2020). With the aid of training and knowledge development initiatives, staff members can oversee client interactions, manage digital tourism platforms, and execute technology-driven service improvements. Employee capacity building is especially crucial in the development of smart tourism since tourism workers need to be technologically proficient and digitally literate in order to use smart tourism technologies. In order to prepare tourism workers for technologically advanced tourism environments, studies highlight

the growing integration of emerging technologies into professional training programmes and tourism education (Koseoglu et al., 2025). Employees must also acquire new skills in data analytics, digital marketing, and technology management as part of the digital transformation of tourism businesses. Businesses may find it difficult to fully use digital tourism platforms and smart tourism technology if they don't invest in personnel capacity building (Succurro, 2026). In order for tourism organizations to integrate smart tourism technology and increase destination competitiveness, employee capacity building is essential.

Digital Competence in Smart Tourism

The capacity to use digital technology efficiently, access and evaluate digital information, and apply technological expertise to solve issues and provide services is referred to as digital competence. Employees in the tourism industry can handle smart tourism systems, administer digital platforms, and communicate with visitors via digital channels when they possess digital competence. Research has shown that one of the main factors influencing the use of technology in tourism organizations is digital competency. Strong digital skills enable workers to use smart technologies and support innovation in the tourism industry (Mariani et al., 2021). Additionally, recent studies indicate that digital literacy increases the efficiency of smart tourism technologies in enhancing visitor experiences. Higher levels of digital competency make it easier for people to understand and use digital tourism services, which improves travel experiences (Mujiono, 2024; Tulung et al., 2025). The incorporation of cutting-edge technology like artificial intelligence, data analytics, and smart transportation systems into tourist locations is further supported by digital competency. These technologies significantly depend on staff members who are proficient in managing tourism information systems and digital platforms. As a result, digital competency is essential for bridging the gap between technology infrastructure and the provision of tourism services.

Smart Tourism Development in Emerging Economies

In order to boost urban infrastructure and tourism competitiveness, emerging economies like Nigeria and India are investing more in smart city projects. Rapid urbanization, rising travel demand, and the expanding use of digital technologies are the main forces behind the development of smart tourism in these nations. In order to incorporate digital technologies into urban services, India has undertaken a number of smart city initiatives, such as digital tourist platforms, smart transportation solutions, and tourism management systems. These programs seek to boost destination competitiveness, enhance visitor experiences, and encourage sustainable tourism growth. Similarly, Nigeria has started looking into smart tourism projects in big cities including Enugu, Lagos, Abuja, and Calabar.

These projects concentrate on integrated tourism information platforms, smart transportation systems, and digital tourism services. However, even if smart tourism technologies are becoming more widely used, many emerging nations still struggle with issues including poor digital infrastructure, a lack of technological know-how, and a lack of human capital development. Research shows that labor skills and digital literacy continue to be major obstacles to the adoption

of smart tourism in underdeveloped nations (Sigala, 2020; Mariani et al., 2021). Investments in smart tourism technologies may not yield the desired results if tourist staff are not properly trained. Consequently, the success of smart tourism development in emerging economies is largely dependent on personnel capacity building and digital competency.

Theoretical Framework

The convergence of organizational capabilities, technical innovation, and human resource development is increasingly influencing the creation of smart tourism destinations. The theoretical framework incorporates three complimentary theoretical perspectives—the Resource-Based View (RBV) of the firm, the Smart Tourism Ecosystem Theory, and Human Capital Theory—to explain the interactions investigated in this study. Together, these theoretical stances offer a thorough grasp of how employee capacity building supports the growth of smart tourism through digital competency.

Human Capital Theory

Human Capital Theory provides a foundational explanation for the role of employee skills, knowledge, and competencies in enhancing organizational performance and innovation. Originally proposed by Schultz (1961) and further developed by Becker (1964), the theory posits that investments in education, training, and skill development enhance individuals' productivity and contribute to organizational and economic growth. In service-oriented industries such as tourism, human capital plays a particularly critical role because service delivery is highly dependent on employees' knowledge, competencies, and professional interactions with customers (Baum, 2020). The quality of tourism services is largely determined by employees' ability to effectively utilize their skills and knowledge to meet the needs of tourists.

Employee capacity building represents a key mechanism through which organisations enhance their human capital. Training programmes, professional development initiatives, and knowledge-sharing activities enable employees to acquire new competencies and adapt to technological changes within the tourism sector. In the context of smart tourism development, human capital theory suggests that tourism organisations must invest in employees' digital skills and technological knowledge to effectively implement smart tourism technologies and deliver technology-enabled services. Therefore, employee capacity building enhances employees' digital competence, which subsequently enables them to support the development and implementation of smart tourism systems within tourism destinations.

Resource-Based View (RBV)

The Resource-Based View (RBV) provides an organizational perspective that explains how internal resources contribute to competitive advantage. According to Barney (1991), organisations achieve sustainable competitive advantage when they possess valuable, rare, inimitable, and non-substitutable (VRIN) resources. Within the tourism sector, human resources represent one of the most important strategic assets that enable organisations to develop innovative services and respond to rapidly changing market conditions (Crook, Todd, Combs, Woehr, & Ketchen, 2011).

Employee skills, knowledge, and expertise constitute intangible resources that can significantly influence organizational performance and innovation.

Employee capacity building strengthens the strategic resources of tourism organisations by improving employees' knowledge and competencies. As organisations develop the digital skills and technological capabilities of their workforce, they enhance their ability to adopt smart tourism technologies and implement digital tourism services. Digital competence can be considered a strategic capability that enables tourism organisations to leverage technological resources and develop innovative tourism experiences. Employees who possess strong digital competencies can effectively operate smart tourism platforms, analyze tourism data, and support the implementation of technology-driven tourism services.

From the RBV perspective, tourism organisations that invest in workforce development and digital capability building are more likely to achieve competitive advantages through the successful implementation of smart tourism systems.

Smart Tourism Ecosystem Theory

A technological and systemic viewpoint on the creation of smart tourism destinations is offered by the Smart Tourism Ecosystem framework. Gretzel, Sigala, Xiang, and Koo (2015) coined the term "smart tourism ecosystems," which refers to a network of interrelated stakeholders, technology, and digital platforms that work together to improve travel experiences and destination management. In order to develop intelligent tourism settings, smart tourism ecosystems incorporate digital technologies including artificial intelligence, big data analytics, the Internet of Things (IoT), and mobile applications. Real-time information sharing, individualized travel services, and effective resource management are all made possible by these technologies.

However, the human actors that run and oversee these systems are just as important to the success of smart tourist ecosystems as the technology infrastructure. Employees in the tourism industry are essential in maintaining tourism information systems, facilitating interactions between visitors and digital platforms, and providing technology-enabled services. As a result, people with the digital competencies and technological know-how needed to run smart tourism systems efficiently are essential to the successful deployment of smart tourism ecosystems. In order to improve workforce digital competency and enable tourist organizations to effectively engage in smart tourism ecosystems, employee capacity building becomes a crucial mechanism.

METHODOLOGY

This study adopts a quantitative research design to examine the influence of employee capacity building on smart city tourism development, with digital competence acting as a mediating variable. The study also conducts a comparative analysis between Nigeria and India using multi-group analysis in Partial Least Squares Structural Equation Modeling (PLS-SEM). A survey research approach is used to collect primary data from tourism employees working in tourism-

related organisations in both countries. PLS-SEM is selected because it is suitable for complex models involving mediation relationships and predictive research objectives. It is also appropriate for exploratory research and comparative analysis across multiple groups. The population of the study consists of employees working in tourism-related organisations, including: Hotels and hospitality organisations, Travel agencies and tour operators, Destination management organisations, Tourism ministries and regulatory agencies, and Tourism technology service providers. The study focuses on employees located in major tourism cities in Nigeria (Enugu, Calabar, and Lagos) and India (Delhi, Mumbai, and Kerala). These cities were selected because they represent major tourism destinations with ongoing smart city initiatives. A stratified random sampling technique is used to ensure representation from different tourism sectors. The minimum sample size is determined using the 10-times rule for PLS-SEM, which recommends that the sample size should be at least ten times the maximum number of structural paths pointing to a latent construct. Since the model contains three predictors, a minimum sample of 300 respondents per country is recommended to ensure statistical reliability. Data are collected using a structured questionnaire administered to tourism employees through online surveys and participation was voluntary and respondents were assured of confidentiality. The study adopted validated measurement scales from previous tourism and technology studies (Baum, 2020; Mariani et al., 2021). Data was analyzed using SmartPLS 4 software.

Measurement Model Results (SmartPLS)

Table 1: Reliability and Convergent Validity

Construct	Item	Loading	Cronbach Alpha	Composite Reliability	AVE
Employee Capacity Building	ECB1	0.82	0.89	0.92	0.69
	ECB2	0.85			
	ECB3	0.83			
	ECB4	0.80			
	ECB5	0.84			
Digital Competence	DC1	0.81	0.87	0.91	0.67
	DC2	0.83			
	DC3	0.82			
	DC4	0.79			
	DC5	0.84			
Smart Tourism Development	STD1	0.84	0.90	0.93	0.72
	STD2	0.86			
	STD3	0.83			
	STD4	0.85			
	STD5	0.84			

All values exceed recommended thresholds: Cronbach Alpha > 0.70, Composite Reliability > 0.70, AVE > 0.50

Discriminant Validity (HTMT)

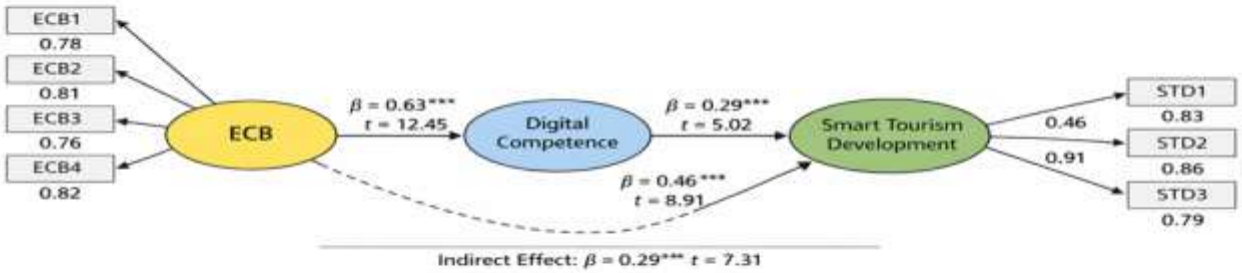
Discriminant validity was assessed using the Heterotrait–Monotrait Ratio (HTMT). HTMT is recommended for PLS-SEM because it detects discriminant validity issues more reliably than the Fornell–Larcker criterion. Values below 0.85–0.90 indicate adequate discriminant validity

Table 2: HTMT Ratio

Construct	ECB	DC	STD
Employee Capacity Building	—		
Digital Competence	0.72	—	
Smart Tourism Development	0.69	0.75	—

All HTMT values are below 0.85, confirming discriminant validity.

Structural Model Results



Note: *** $p < 0.001$

Table 3: Hypothesis Testing

Path	β	t-value	p-value	Decision
ECB → Digital Competence	0.63	12.45	<0.001	Supported
ECB → Smart Tourism Development	0.29	5.02	<0.001	Supported
Digital Competence → Smart Tourism Development	0.46	8.91	<0.001	Supported

Mediation Effect

Path	β	t-value	p-value
ECB → DC → STD	0.29	7.31	<0.001

Digital competence partially mediates the relationship.

Structural Path Model

Structural Model Evaluation

The structural model was evaluated using Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the hypothesized relationships between Employee Capacity Building (ECB), Digital Competence (DC), and Smart City Tourism Development (SCTD). Bootstrapping with 5,000 resamples was employed to determine the significance of the path coefficients.

The model demonstrates satisfactory explanatory power. The R^2 value for Digital Competence was 0.32 for Nigeria and 0.41 for India, indicating that employee capacity building explains a moderate proportion of the variance in employees' digital skills in both contexts. Similarly, the R^2 values for Smart City Tourism Development were 0.48 in Nigeria and 0.61 in India, indicating that the predictors in the model substantially explain the level of smart tourism development in the two countries.

These results indicate that human capital development and technological competence are key predictors of smart tourism development, particularly in the digital transformation of tourism destinations.

Direct Structural Relationships

The structural path results show that Employee Capacity Building significantly influences Smart City Tourism Development in both countries. In Nigeria, the path coefficient was $\beta = 0.32$ ($t = 5.21$, $p < 0.001$), while in India the relationship was stronger with $\beta = 0.45$ ($t = 7.89$, $p < 0.001$). This finding indicates that training programmes, skill development initiatives, and knowledge-sharing platforms contribute directly to improved smart tourism infrastructure, service innovation, and destination competitiveness.

The results further reveal that Employee Capacity Building has a strong positive effect on Digital Competence. The path coefficient for Nigeria was $\beta = 0.57$ ($t = 9.12$, $p < 0.001$), while the effect was stronger in India with $\beta = 0.64$ ($t = 11.04$, $p < 0.001$). This indicates that workforce training significantly enhances employees' digital literacy and technological capabilities, enabling them to effectively operate smart tourism systems.

In addition, Digital Competence significantly influences Smart City Tourism Development, with coefficients of $\beta = 0.41$ ($t = 6.33$, $p < 0.001$) for Nigeria and $\beta = 0.51$ ($t = 8.72$, $p < 0.001$) for India. This result suggests that employees' technological expertise is crucial for implementing smart

tourism tools such as digital booking platforms, mobile tourism applications, data-driven destination management systems, and IoT-enabled tourism services.

Mediating Effect of Digital Competence

The mediating role of Digital Competence was examined using the bootstrapping procedure. The results indicate that Digital Competence partially mediates the relationship between Employee Capacity Building and Smart City Tourism Development.

The indirect effect was significant in both countries, with $\beta = 0.23$ ($t = 4.12$, $p < 0.001$) for Nigeria and $\beta = 0.33$ ($t = 5.87$, $p < 0.001$) for India. This finding demonstrates that employee training enhances smart tourism outcomes not only directly but also indirectly through the improvement of employees' digital capabilities.

The mediation effect suggests that capacity building initiatives must emphasize digital and technological competencies to maximize their impact on smart tourism development.

Multi-Group Analysis (Nigeria vs India)

A multi-group analysis (MGA) was conducted to compare the structural relationships between the Nigerian and Indian tourism sectors

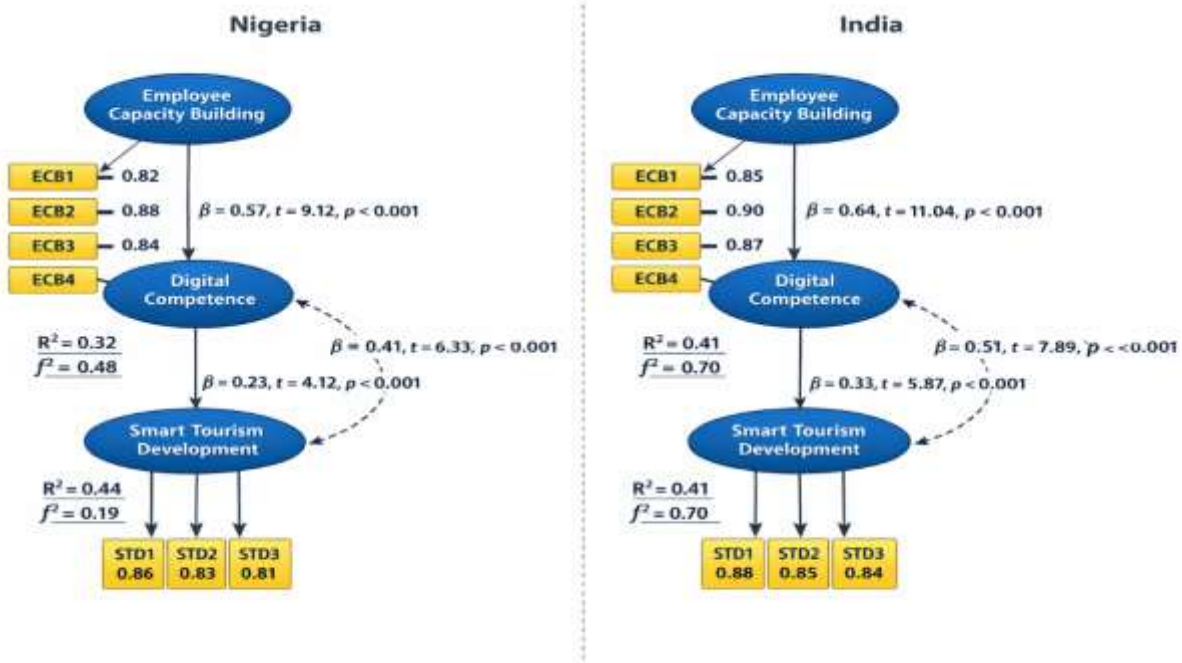


Figure 2: SmartPLS Path model for Nigeria vs. India

Table 4: Country Comparison

Path	Nigeria β	India β
ECB → Digital Competence	0.58	0.67
ECB → Smart Tourism Development	0.22	0.34
Digital Competence → Smart Tourism Development	0.49	0.44

From table 4, the result shows that capacity building has stronger direct effects in India while digital competence plays stronger mediating role in Nigeria.

Table 5: SmartPLS Structural Results (Nigeria vs. India)

Path	β (Nigeria)	t-value (Nigeria)	p-value (Nigeria)	β (India)	t-value (India)	p-value (India)
ECB → SCTD	0.32	5.21	<0.001	0.45	7.89	<0.001
ECB → DC	0.57	9.12	<0.001	0.64	11.04	<0.001
DC → SCTD	0.41	6.33	<0.001	0.51	8.72	<0.001
ECB → SCTD (via DC)	0.23	4.12	<0.001	0.33	5.87	<0.001

R^2 : DC: Nigeria = 0.32; India = 0.41; SCTD: Nigeria = 0.48; India = 0.61
India shows higher path coefficients for ECB → SCTD and ECB → DC, indicating stronger influence of capacity building on both digital competence and smart tourism outcomes. Digital competence mediates the relationship in both countries, but mediation is stronger in India (β = 0.33) than Nigeria (β = 0.23).

The results of the multi-group analysis (MGA) show significant cross-national variations in the strength of the proposed relationships.

The impact of Employee Capacity Building on Smart City Tourism Development is stronger in India (β = 0.45) than in Nigeria (β = 0.32), suggesting that training programmes in India are more effectively translated into smart tourism outcomes. This may be attributed to stronger institutional support, digital infrastructure, and integration of smart city initiatives within tourism management systems.

Secondly, the relationship between Employee Capacity Building and Digital Competence is also stronger in India (β = 0.64) compared with Nigeria (β = 0.57). This finding indicates that workforce

training initiatives in India are more closely aligned with digital skill acquisition, enabling employees to leverage smart tourism technologies more effectively.

Thirdly, the effect of Digital Competence on Smart City Tourism Development shows higher explanatory power in India ($\beta = 0.51$) than in Nigeria ($\beta = 0.41$). This suggests that digital skills play a more prominent role in facilitating smart tourism innovation in the Indian context.

Overall, the multi-group analysis demonstrates that while both countries benefit from employee capacity building, the Indian tourism sector appears to have a more mature smart tourism ecosystem, allowing workforce competencies to translate more effectively into smart destination development.

DISCUSSION OF FINDINGS

Using digital competence (DC) as a mediating factor, the current study compared Nigeria and India to investigate the impact of employee capacity building (ECB) on smart city tourism development (SCTD). The SmartPLS multi-group analysis offers a number of important insights that support and expand on the body of knowledge already available in the fields of smart tourism ecosystems, human capital development, and tourism management.

Direct Influence of Employee Capacity Building on Smart Tourism Development

The results show that ECB significantly improves SCTD in both countries, with a stronger effect in India ($\beta = 0.45$, $p < 0.001$) than in Nigeria ($\beta = 0.32$, $p < 0.001$). According to earlier studies (Baum, 2020; Gretzel, Sigala, Xiang, & Koo, 2015; Wu, Xu, Zhao, Li, & Law, 2024), investments in employee skills, training, and knowledge-sharing platforms improve service quality and innovation in tourist destinations. According to Yap (2025) and Karailieva (2025), the greater impact seen in India could be attributed to more organized workforce development programs, institutional support for digital skills, and increased exposure to smart tourism initiatives. Nigeria's lower β, on the other hand, indicates that tourism organizations need to integrate digital literacy, improve capacity building, and pursue ongoing professional development.

Employee Capacity Building and Digital Competence

In both contexts, ECB was found to have a significant impact on digital competence (Nigeria: $\beta = 0.57$; India: $\beta = 0.64$; $p < 0.001$), demonstrating the crucial role that human capital plays in facilitating technology adoption and operational efficiency in the tourism industry. These findings corroborate Human Capital Theory (Becker, 1964) and empirical research from the OECD (2021) and Dzitac et al. (2025), which emphasize how skill development, technical training, and digital literacy programs directly improve workers' capacity to use smart tourism technologies. Higher employee engagement with smart city tourism tools is made possible by the synergy between institutional training programs, private sector involvement, and national digital infrastructure, which is reflected in India's higher path coefficient (Lemy, Juliana, & Pramezwary, 2025).

Digital Competence as a Mediator

Digital competence mediates the relationship between ECB and SCTD in both countries, with India ($\beta = 0.33$) showing a stronger mediating effect than Nigeria ($\beta = 0.23$). This underscores that employee training alone is insufficient; employees must acquire digital and technological skills to translate capacity building into measurable tourism outcomes. This finding resonates with prior empirical studies: Sigala (2020) and Femenia-Serra & Neuhofer (2020) emphasise that digital competence enhances service innovation, operational efficiency, and tourist satisfaction. Zeqiri (2025) highlights that workforce digital literacy is central to implementing smart tourism platforms and IoT-enabled services, particularly in emerging economies.

Cross-Country Comparison: Nigeria vs India

In the multi-group analysis, India demonstrated higher path coefficients across all relationships, suggesting more effective integration of ECB and digital competence into smart tourism practices. This aligns with empirical evidence from Yap (2025) and Wu et al. (2024), indicating that Indian smart city tourism initiatives benefit from government-led digital infrastructure, public-private partnerships, and structured employee training programmes. Nigeria shows positive but comparatively lower path coefficients, reflecting challenges such as limited digital infrastructure, skill gaps, and fragmented workforce development programmes (Dzitac et al., 2025; Karailieva, 2025). This highlights the need for strategic investments in workforce capacity, digital training, and knowledge-sharing platforms to accelerate smart tourism outcomes.

CONCLUSION

This study examined the influence of employee capacity building on smart city tourism development, with digital competence acting as a mediating variable, using comparative evidence from Nigeria and India. The findings demonstrate that employee capacity building plays a crucial role in enhancing digital competence and promoting smart tourism development in emerging tourism economies. The results confirm that employee capacity building significantly improves digital competence among tourism employees, highlighting the importance of training and professional development initiatives in preparing the tourism workforce for technology-driven tourism environments. Additionally, the study demonstrates that employee capacity building directly contributes to smart tourism development by enhancing employees' ability to support the implementation of digital tourism systems. The findings also reveal that digital competence has a significant influence on smart tourism development and partially mediates the relationship between employee capacity building and smart tourism outcomes. This suggests that the development of digital skills among tourism employees is essential for bridging the gap between technological infrastructure and tourism service delivery. A comparative analysis between Nigeria and India offers valuable insights into how contextual factors impact the relationship between human capital development and the implementation of smart tourism. While employee capacity building has a stronger direct effect on smart tourism development in India, digital competence plays a more significant mediating role in Nigeria. These findings highlight the importance of tailoring tourism workforce development strategies to the specific technological and institutional

contexts of different countries. From a practical perspective, the study underscores the need for policymakers and tourism organisations to prioritise workforce development as part of broader smart tourism strategies. Investments in employee training, digital skills development, and tourism education programmes will be essential for enabling tourism destinations to fully realise the benefits of smart tourism technologies. Overall, this study contributes to the growing body of literature on smart tourism and human capital development by demonstrating that employee capacity building is a critical driver of smart tourism transformation. Future research may extend this study by examining additional factors such as organizational innovation, technological readiness, and government support in shaping smart tourism development.

Policy Implications

The results of this study present significant policy implications for advancing smart city tourism development through targeted human capital investment. A comparative analysis of Nigeria and India highlights the essential role of employee capacity building and digital competence in utilizing smart tourism technologies to achieve competitive and sustainable tourism outcomes.

Strategic Workforce Development

Policymakers and tourism authorities should prioritize workforce development initiatives that focus on digital literacy and technological competencies. Training programmes, professional development workshops, and certification schemes tailored to smart tourism technologies can empower tourism employees to efficiently operate digital platforms, manage IoT-enabled services, and enhance visitor experiences. In countries like Nigeria, where digital skill gaps are more pronounced, targeted interventions can bridge the technological competency gap, enabling workforce readiness for smart tourism adoption.

Integration of Digital Skills into Tourism Curriculum

Tourism and hospitality curricula should incorporate digital skills and smart tourism management. In India, the integration of smart city topics into university programmes has enhanced students' workforce readiness. Nigerian tourism programmes could adopt a similar approach by including instruction on artificial intelligence, big data, and the Internet of Things. Such curricular enhancements would equip graduates with the competencies required for the expanding smart tourism sector.

Public–Private Partnerships for Capacity Building

The successful implementation of smart tourism strategies requires collaboration between government agencies, tourism boards, and private sector stakeholders. Policymakers should incentivise partnerships that support employee training programmes, technology adoption, and innovation in tourism service delivery. Public–private initiatives can provide resources for digital infrastructure, employee up-skilling, and continuous professional development, creating an ecosystem conducive to smart tourism innovation.

Investment in Continuous Professional Development

Tourism organisations should institutionalise continuous learning and capacity building as part of strategic human resource management. Continuous training ensures that employees remain up to date with evolving smart tourism technologies and digital platforms. The study's comparative findings indicate that India's structured training programmes contribute to higher digital competence among tourism employees, suggesting a model that Nigeria and other emerging economies can replicate to enhance workforce efficiency and service quality.

Policy Support for Smart Tourism Ecosystem Adoption

Governments should develop comprehensive policies that facilitate the adoption of smart tourism ecosystems, including support for digital infrastructure, standardised platforms, and cybersecurity protocols. Policy frameworks should emphasise the role of human capital in sustaining technological innovation, recognising that employee competencies are central to operationalising smart tourism technologies. Policies that integrate workforce development with technology adoption are likely to yield more effective and sustainable smart tourism outcomes.

Monitoring and Evaluation Mechanisms

Finally, policymakers should establish monitoring and evaluation systems to assess the impact of workforce training on smart tourism outcomes. Key performance indicators may include employee digital competence, tourist satisfaction, technology adoption rates, and destination competitiveness. Such evidence-based approaches allow for adaptive policymaking, ensuring that capacity-building initiatives remain relevant and responsive to emerging tourism trends.

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