

Digital Transformation in Tourism Education: Cultivating Entrepreneurial Competencies in Indonesian Higher Education Institutions for Tourism

Agoes Tinus Lis Indrianto¹, Christy Widyawati²

Universitas Ciputra Surabaya^{1,2}

*E-mail: agoes.tinus@ciputra.ac.id

Abstract

Indonesia's tourism education is encountering considerable obstacles in advancing students' entrepreneurial competencies amidst digital revolution. This study seeks to evaluate the influence of digitalization on tourist education and to ascertain its efficacy as well as the challenges to its implementation. Utilizing a descriptive qualitative methodology, data were collected via interviews with scholars and industry professionals, as well as through observations and recording from tourist higher education institutions. The findings reveal that while several institutions have incorporated technology into education, deficiencies in infrastructure and teacher preparedness persist as significant barriers. The study indicates that a more systematic approach is necessary to incorporate technology efficiently, ensuring graduates remain competitive in the digital tourist sector. This research advances the creation of a more flexible and innovative technology-driven educational strategy.

Keywords: digital transformation, tourism education, entrepreneurship, higher education



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Introduction

The digital change in Indonesia's tourism education is advancing swiftly, especially due to globalization and the requirements of the Fourth Industrial Revolution. The incorporation of digital technology into tourist education courses encounters several hurdles, especially in developing students' entrepreneurial skills. Despite the existence of numerous digital learning platforms, including e-learning, business simulations, and collaborative tools, many higher education institutions in tourism have not yet fully embraced these technologies (Gutierriz, Ferreira, & Fernandes, 2023). The primary challenges in executing digital transformation are insufficient technology infrastructure, faculty preparedness to embrace digital learning methodologies, and students' access to appropriate technological resources (Ku, 2024). Consequently, a more strategic approach is necessary to surmount these obstacles and improve the efficacy of entrepreneurship instruction in tourism higher education institutions.

Prior studies have shown that digital transformation markedly improves higher education by increasing learning efficiency and broadening access to educational resources (Schönherr et al., 2023). Additional research indicates that students' digital proficiency enhances their employability in the labor market (Satar et al., 2024). Nonetheless, a disparity persists between the application of technology in education and the cultivation of students' entrepreneurial competencies. Recent studies reveal that numerous higher education institutions continue to emphasize theoretical entrepreneurship education, neglecting practical digital experiences that could enhance students' innovation capabilities (Bachmann et al., 2024). Consequently, additional study is required to

investigate the successful integration of digital transformation into tourist education to enhance entrepreneurship learning via practice-based methodologies.

This study seeks to examine the influence of digital transformation on tourism education, particularly regarding the enhancement of students' entrepreneurial competencies in higher education institutions. This research aims to evaluate the efficacy of digital technology in entrepreneurship education and identify the problems related to its application (Deng, Wan, & Ma, 2024). This study will identify challenges and offer strategic recommendations for tourism higher education institutions to enhance technological integration in their curricula, thereby cultivating graduates who are adaptable, innovative, and competitive in the digital tourism sector (Lešinskis et al., 2023).

Digital transformation in tourism education serves as a key component in improving graduate quality to fulfill the requirements of a progressively digitalized tourism business (Khoo et al., 2023). The effective use of digital technology into entrepreneurship curricula can facilitate interactive learning experiences, enhance students' digital competencies, and broaden access to business and investment networks via digital platforms (Satar, Alarifi, & Alrubaishi, 2023). This study aims to enhance innovative learning models in tourist education and provide recommendations to higher education officials for formulating sustainable digitalization strategies in Indonesia's tourism education sector.

Digital transformation represents a major change in the way organizations, especially educational institutions, employ digital technology to improve operations and services (Gutiérrez, Ferreira, & Fernandes, 2023). In tourist education, digital transformation entails utilizing technology to enhance students' learning experiences, including e-learning, augmented reality (AR), and artificial intelligence (AI)-driven business simulations (Bekele & Raj, 2024). Digitalization enhances flexible and inclusive education, offering greater access to students from various socioeconomic backgrounds (Ku, 2024).

Digital revolution in tourism education can be classified into three principal domains. Initially, digital content delivery encompasses online learning platforms, including Massive Open Online Courses (MOOCs) and Learning Management Systems (LMS) (Gutiérrez, Ferreira, & Fernandes, 2023). Secondly, digital educational environments include e-laboratories, virtual tourism experiences, and data analytics tools aimed at improving learning efficacy (Pencarelli, 2019). Third, the integration of technology in institutional management encompasses the automation of academic administration and the utilization of AI-driven systems to customize learning experiences (Jones, Troise, & Schiuma, 2023). Fourth, digital evaluation and assessment systems, including blockchain-based credentialing, ensure transparency and correctness in academic evaluations (Volynec, 2024).

Tourism education is a multidisciplinary domain that includes the examination of tourism theory and practice, encompassing hospitality, travel management, and destination management (Tang & Huang, 2023). The principal objective of tourism education is to furnish students with managerial and technical competencies pertinent to the global tourist sector. Tourist curricula are progressively integrating digital learning methodologies due to technology improvements, including the utilization of big data for tourist trend analysis and the implementation of AI in customer service (Madzík et al., 2023).

Tourism education can be categorized into several primary classifications. Initially, education grounded in academia encompasses theoretical examinations of tourism, tourist economics, and tourism policy (Cheng et al., 2023). Secondly, experiential education, wherein students acquire practical skills via internships in the hospitality and tourist sectors (Deng, Wan, & Ma, 2024). Third, digital education incorporates business simulations, virtual reality, and data analytics into the learning process (Bekele & Raj, 2024). Fourth, entrepreneurship-focused tourism education instructs students on establishing tourist-related enterprises utilizing digital platforms (Garcez, Silva, & Franco, 2021).

Entrepreneurship entails the identification, development, and management of a new company endeavor aimed at generating profit while delivering economic and social benefit (Jafari-Sadeghi et

al., 2021). In higher education, entrepreneurship is frequently linked to innovation, competitiveness, and employment generation. Within the realm of tourism, entrepreneurship is essential for the advancement of experience-oriented tourist enterprises, travel services, and digital platforms that bolster the global tourism sector (Amaro, Caldeira, & Seabra, 2024).

Tourism entrepreneurship can be categorized into numerous primary segments. Initially, service-oriented entrepreneurship encompasses enterprises in hotel, dining, and travel agencies (Satalkina & Steiner, 2020). Secondly, technology-driven entrepreneurship, characterized by digital innovations including travel booking software, blockchain-based tourism platforms, and AI-enhanced customer service, constitutes essential business elements (Bican & Brem, 2020). Third, social entrepreneurship focuses on firms that seek to help local communities, exemplified by community-based tourism and ecotourism (Bekele & Raj, 2024).

Methods

This study examines the phenomena of digital transformation in tourism education in higher education institutions in Indonesia, specifically its impact on the development of students' entrepreneurial competencies. Digital transformation is acknowledged as a crucial element in enhancing the quality of higher education, particularly within the tourism sector, which significantly depends on technological innovation and adaptability (Bekele & Raj, 2024). Nonetheless, despite the growing integration of digital technologies like e-learning, AI-driven business simulations, and big data analytics in tourist management, numerous higher education institutions continue to face challenges in implementation (Gutierriz, Ferreira, & Fernandes, 2023). The primary obstacles consist of inadequate technology infrastructure, staff preparedness in employing digital technologies, and students' access to suitable technological resources (Ku, 2024). This study seeks to deliver a thorough analysis of the challenges and prospects associated with the incorporation of technology into entrepreneurship education within tourism higher education institutions.

This study utilizes a descriptive qualitative research methodology to offer a comprehensive knowledge of digital change in tourist education, without altering factors or forecasting causal linkages (Cheng et al., 2023). Primary data was obtained by comprehensive interviews with key informants engaged in the deployment of digital technology in tourism education, encompassing academics, industry professionals, and students (Garcez, Silva, & Franco, 2021). Secondary data comprised literature reviews from academic publications, industry information on tourist digitalization, and governmental regulations pertaining to higher education digitalization (Bekele & Raj, 2024).

This study's information sources comprise numerous key informants directly pertinent to the subject of digital transformation in tourism education. Primary informant: Director of the Tourism Study Program, offering perspectives on academic policies and techniques for incorporating technology into the curriculum. Second informant: Lecturer of Entrepreneurship Courses, providing insights on the efficacy of digital learning methodologies in augmenting students' entrepreneurial competencies (Deng, Wan, & Ma, 2024). Third informant: Tourism students, exemplifying direct experiences in adjusting to digital disruption inside entrepreneurial education. Fourth informant: Professionals from digital tourism firms, offering insights into industry developments and the digital skills necessary for graduates to remain competitive (Satalkina & Steiner, 2020).

This research was executed in multiple phases. Primary data was collected using semi-structured in-depth interviews with informants to examine their viewpoints on the adoption of digitalization in tourist education (Bican & Brem, 2020). The semi-structured interview method facilitated flexibility in eliciting additional information from participants. The researcher employed participant observation to directly examine the application of digital technology in learning processes in tourism higher education institutions (Bekele & Raj, 2024). Observations encompassed the assessment of e-learning platforms, utilization of business simulation software, and students' digital learning engagements. Collection of secondary data, encompassing the examination of educational

regulations, industry reports, and previous studies on digital transformation in entrepreneurship education (Garcez, Silva, & Franco, 2021). The gathered data was subsequently classified according to its pertinence to the research.

This study's data analysis adheres to the Miles and Huberman framework, encompassing three primary phases: data reduction, data presentation, and conclusion formulation and data validation (Satalkina & Steiner, 2020). Data reduction was executed by selecting and filtering pertinent information from interviews, observations, and documentation. The presentation of data involved structuring study findings into a narrative and matrix style to highlight essential patterns and themes. Conclusion formulation entailed recognizing principal findings that corroborate or contest the original study hypothesis.

This study employed data source triangulation to assess the quality and reliability of the data, comparing information from several sources to achieve a more objective and thorough analysis (Bekele & Raj, 2024). The interview results were corroborated using observational data and documentation to facilitate a more comprehensive analysis of the examined phenomenon.

Results and Discussions

1. Results

Recent years have witnessed substantial advancements in the digital transformation of tourist education. Interviews, observations, and documentation indicate that certain higher education institutions have integrated technology into their curricula; nonetheless, the execution is inconsistent. Numerous institutions have used Learning Management Systems (LMS) to facilitate online access to educational resources. Nonetheless, the utilization of LMS is confined to the dissemination of materials, lacking the promotion of active engagement between instructors and students. Several colleges have instituted digital business incubation programs to promote student entrepreneurship, however engagement among students remains very low.

"At present, we have initiated the adoption of certain digital learning methodologies; however, their implementation remains inconsistent. Numerous lecturers are not yet proficient in utilizing these technologies, which constrains the efficacy of digital learning." (Head of the Tourism Study Program, 2024)

The results demonstrate that although digital transformation projects have been implemented, numerous significant obstacles impede their efficacy. Higher education schools that incorporate digital technology into their curricula typically provide graduates who are more adept for the digital tourist sector. Nevertheless, numerous schools continue to fall behind in infrastructural preparedness and faculty development. Students utilizing AI-driven business simulations and startup incubation programs exhibit more adaptability and innovation compared to those who depend exclusively on theoretical knowledge.

"There exists a notable disparity between students who acquire practical experience via digital business simulations and those who solely engage with theoretical coursework. The scope of digitalization must be broadened to guarantee equitable learning opportunities for all students." (Entrepreneurship Education Expert, 2024)

The deficiencies in digital transformation execution are closely associated with the difficulties outlined in this study. Institutions that continue to depend on conventional face-to-face teaching techniques often yield graduates who are less competitive in the digital job market. This observation highlights the necessity for a more structured policy framework to facilitate digital integration in entrepreneurship education.

"The contemporary tourism sector requires graduates proficient in technology, capable of implementing digital marketing, big data, and artificial intelligence within tourism enterprises. Regrettably, the majority of graduates remain deficient in these competencies." (Digital Startup Practitioner, 2024)

Tourism Education and Entrepreneurial Skills

Certain tourism higher education institutes have integrated digital entrepreneurship education into their curricula. Nonetheless, the majority of programs are predominantly theoretical, providing limited practical experience. Observations indicate that certain institutions have incorporated digital business innovation competitions into their curricula; nonetheless, student participation remains minimal. Furthermore, paperwork reveals that certain courses have commenced the use of business simulation software to augment students' comprehension of digital business processes.

"We have endeavored to implement project-based learning models in which students cultivate digital business concepts. Nevertheless, not all students possess sufficient technological resources." (Pedagogy Expert, 2024)

Research indicates that the incorporation of technology into tourist education continues to encounter considerable obstacles. Institutions that effectively adopt digital pedagogies typically cultivate students who are more imaginative and proficient in establishing tourist companies. Nonetheless, numerous students continue to perceive themselves as inadequately equipped to initiate their own enterprises owing to restricted access to mentors and technology resources.

"Our objective is to establish a startup ecosystem on campus; however, enhanced institutional and industry support is essential to foster a favorable environment for students." (Tourism Student, 2024)

Interviews and observations indicate that students with practical digital business experience are more prepared for the industry than those who depend exclusively on theoretical education. Therefore, colleges must implement more experiential learning approaches to guarantee that students have the requisite entrepreneurial skills for the digital economy.

"A theory-centric tourism education framework is inadequate. Students must acquire practical experience in establishing digital enterprises to maintain competitiveness." (Digital Startup Practitioner, 2024)

Digital Entrepreneurship in Tourism Education

In recent years, digital entrepreneurship has emerged as a vital element of the tourism sector. Nevertheless, graduates of higher education continue to encounter skill deficiencies upon joining the digital business sector. Documentation reveals that students engaged in startup incubators are more adept at launching and scaling their enterprises than those who receive solely theoretical instruction.

"Digital entrepreneurship represents the future of the tourism sector. Students who do not comprehend digital technology will lag in the competitive landscape." (Digital Startup Practitioner, 2024).

Research indicates that students who receive actual digital business training exhibit greater readiness for the workforce. Nonetheless, restricted access to technology and resources at numerous universities continues to pose a substantial obstacle to the development of students' entrepreneurial competencies. The study indicates that in the absence of enhanced integration between digital technology and entrepreneurship education, tourism graduates will find it difficult to acclimate to the digital tourism sector. Consequently, systematic procedures are essential to guarantee that students have suitable digital business training that corresponds with industry requirements.

2. Discussions

The digital transition in tourist education has advanced considerably, although its execution remains inadequate. Research reveals that although numerous higher education institutions have incorporated digital technology into their courses, deficiencies in infrastructure, staff preparedness, and student access to digital resources persist as obstacles. Students who acquire practical experience in digital business via incubation programs and business simulations

are generally more equipped for the sector than those who solely obtain theoretical education. Furthermore, collaboration with the industry is constrained, resulting in a disparity between the capabilities demanded by digital tourist firms and those held by graduates.

This study corroborates prior research, highlighting that digital transformation in higher education necessitates not only technological adoption but also faculty preparedness and institutional policy support (Gutierriz, Ferreira, & Fernandes, 2023). This study underscores a distinct difficulty in tourist education, as digital transformation is fragmented due to insufficient interaction with digital entrepreneurship ecosystems (Deng, Wan, & Ma, 2024). The findings substantiate the assertion that digitalization in tourism education necessitates not only the integration of technology but also collaboration with industry and actual entrepreneurial experiences (Bekele & Raj, 2024).

An analysis of these outcomes indicates that incorporating technology into tourist education provides substantial advantages, especially in cultivating entrepreneurial skills among students. Individuals with access to digital business simulations and startup incubators possess a superior understanding of the dynamics of digital entrepreneurship in the tourism sector. Findings indicate that, without systematic enhancements in educational policy, the disparity between academic curricula and industry requirements will continue. This implies that digital transformation in tourism education not only advantages students but also has the capacity to bolster the competitiveness of the tourism sector by producing graduates equipped to adapt to technological advancements (Madzík et al., 2023).

The ramifications of these findings suggest that digital transformation in tourism education extends beyond academic interest and possesses direct significance to the sector. Enhancing partnership between higher education institutions and industry would facilitate students' acquisition of practical experience in establishing digital tourist enterprises, therefore yielding more competitive graduates. This study indicates that educational policies should be reformed to facilitate a more systematic incorporation of digital technology in tourism education. In the absence of robust policies, digital transformation initiatives may remain disjointed and fail to optimize their influence on students (Bican & Brem, 2020).

The research findings are influenced by other factors. The preparedness of educational institutions to embrace digital technologies varies considerably. Certain institutions possess robust digital learning infrastructures, whilst others contend with restricted technological access and unreliable internet connectivity. The digital proficiency of faculty personnel continues to be a significant concern. Numerous educators possess insufficient training in the appropriate utilization of digital resources, hence constraining the quality of technology-enhanced learning experiences. Third, the involvement of industry in higher education remains limited, hindering students' opportunities to get practical experience in digital tourism entrepreneurship. These characteristics indicate that effective digital transformation in tourist education necessitates a comprehensive and systematic strategy (Satalkina & Steiner, 2020).

Considering these findings, several strategic measures should be implemented to advance digital transformation in tourist education. Initially, colleges should augment their investment in digital infrastructure, encompassing the deployment of business simulation software and enhanced interactive online learning platforms. Secondly, faculty personnel ought to undergo more comprehensive training in the integration of technology-driven pedagogical methods, thereby enhancing their ability to provide more captivating and effective digital learning experiences. Third, universities ought to enhance collaborations with industry, enabling students to acquire practical experience in digital tourism business development. Furthermore, higher education policymakers must implement more progressive digitalization policies, including incentives for institutions that effectively incorporate digital entrepreneurship training into their curricula (Bekele & Raj, 2024).

This discourse affirms that digital revolution in tourism education is an imperative necessity. Nonetheless, its effectiveness is contingent upon institutional preparedness, teacher proficiency, and enhanced partnership with industry. Consequently, strategic initiatives must be promptly executed to guarantee that tourism education in Indonesia yields graduates who possess both theoretical knowledge and the ability to innovate within a swiftly changing digital tourist environment.

Conclusion

The results of this study are unexpectedly revealing while the global trend of digital transformation in higher education, numerous tourism higher education institutions in Indonesia continue to fall behind in incorporating technology into entrepreneurship instruction. Although certain universities have implemented Learning Management Systems (LMS), digital business incubation initiatives, and AI-driven business simulations, their efficacy is constrained by infrastructural limitations, teacher preparedness, and students' access to digital resources. In some instances, students pursuing digital entrepreneurship must pursue external learning options due to insufficient institutional support. This disparity underscores that, in the absence of a structured approach, graduates from tourism higher education institutions may face difficulties competing in the swiftly changing digital tourist sector.

This study's principal contribution is its thorough examination of the significance of digital integration in tourist education from both academic and industrial viewpoints. This study theoretically supports the idea that digitalization in education involves not only the use of technology but also the necessity of institutional preparedness and the promotion of collaboration between academia and industry. This research offers higher education institutions advice for the effective implementation of digital techniques to boost students' entrepreneurial competencies. This study establishes a basis for the creation of practice-oriented learning models that fit more closely with industry requirements, thereby enhancing graduates' preparedness for the digital tourist sector.

This study possesses specific constraints that present avenues for future research rather than being drawbacks. The study concentrates exclusively on Indonesian tourism higher education institutions, without juxtaposing them with worldwide models of digital entrepreneurship education. This study primarily collects data from academics and students; however, further investigation into industry viewpoints on graduation expectations would augment the research's depth. Future study may broaden this focus by comparing digital strategies across other educational systems and undertaking longitudinal studies to evaluate the enduring effects of digital transformation in tourism entrepreneurship education. This study provides a situational analysis and establishes a basis for further research on digital transformation and entrepreneurship within the tourism sector.

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