

Virtual Tours as Immersive Digital Promotion Tools for Tourism Destinations and Higher Education Institutions: A Narrative Review

Lawatan Maya sebagai Alat Promosi Digital Imersif untuk Destinasi Pelancongan dan Institusi Pengajian Tinggi: Satu Tinjauan Naratif

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ABSTRACT

Virtual tours have emerged as useful digital promotional tools for vacation sites and higher education institutions that allow viewers to explore actual venues without geographic or cost limits. Despite the widespread use of virtual tours, research has largely looked at them in isolation, either in tourism or in education, without a comparative assessment across the two sectors. This narrative review synthesizes 70 peer-reviewed research (2009–2024) from Scopus, Web of Science, ScienceDirect, and Google Scholar to analyze virtual tour applications, promotional outcomes, and factors determining their success. Results show that 360-degree panoramic technology (50% of tests) is predominant because of its inexpensive cost and wide device compatibility. The main areas of the corpus are tourism (46%) and higher education (44%), which confirms virtual tours as a cross-domain promotional instrument. Virtual tours in tourism boost site awareness and curiosity, and aid pre-visit decision making, with 90% of participants reporting higher visit intention in one study. Virtual tours in higher education help students get to know the institution and help to recruit remote and foreign students. Effectiveness is always determined by four elements, including technological quality, content richness, user technology readiness, and organizational marketing strategy. Five common themes are found for promotional outcomes across both domains: user engagement, immersion and presence, destination and institutional image, visit and enrollment intention, and user satisfaction. Research is heavily centered on Southeast Asia and Europe, with Africa, Latin America, and Central Asia critically under-represented. The review provides an integrated cross-sector approach with practical consequences for marketing practitioners, tourism companies, and higher education institutions.

Keywords: Virtual Tours; Digital Learning; Tourism Promotion; Educational Technology; Accessibility

INTRODUCTION

Virtual tours have transformed our access to and experience of physical spaces, offering immersive digital environments. Advances in 360-degree imagery, virtual reality technologies, geographic information systems, and web-based platforms have made virtual experiences more accessible across a wide range of sectors. Virtual tours are used by colleges and higher education institutions to promote campus facilities, attract prospective students and reach audiences who cannot visit in person. In tourism, destination marketing agencies are employing virtual tours to enhance destination visibility, to reach out to potential guests, and to deliver pre-travel experiences in intensely competitive digital spaces.

As internet access and digital infrastructure continue to advance worldwide, virtual tours have gained increasing attention as effective digital promotion tools across various sectors. Furthermore, these digital interventions overcome traditional barriers such as geographic distance, prohibitive costs, and restrictive operational schedules, thereby fostering more inclusive engagement for both cultural heritage sites and educational settings (Buhalis et al., 2023; Dalmazi et al., 2024). Beyond fostering inclusive engagement, these digital simulations serve as strategic assets that mitigate traditional constraints such as geographic distance, prohibitive travel costs, and restrictive operating hours. By leveraging the strategic integration of hotspots, intuitive 360-degree navigation, and layered multimedia, including audio narrations and contextual annotations, these digital tools transcend passive viewing to facilitate active exploration and deeper cognitive engagement (Samala et al., 2024). This synthesis of technology and content fosters deeper cognitive engagement, effectively transforming virtual tours into dynamic platforms that actively guide, rather than merely inform, potential visitors and prospective students.

However, despite the increasing usage, there are still certain problems that continue to impede the efficient implementation of virtual tours in both industries. Most previous research has considered tourism or education in isolation, without an extensive understanding of the shared technology aspects, user engagement trends, and implementation issues. Additionally, the introduction of varied multimedia components like narration and interactive 360-degree materials typically lacks design consistency, impeding the switch from simple panoramic sequences to completely immersive and user-centric experiences (Samala et al., 2024). But the continuous development of intuitive authoring tools and available web-based frameworks bodes well for overcoming these limitations, leading to more sophisticated and widely deployable virtual experiences.

The strategic deployment of these technologies, in particular with the integration of augmented reality and holographic projections, provides a more thorough synthesis of real-world settings and digital sensory data (Fazio et al., 2023). Moreover, the high development costs, lack of technical skills, challenges related to device compatibility, and unreliable access to the internet still remain barriers to the efficient deployment of promotional activities, especially in the context of poor countries. Moreover, there is no standardized way of measuring user engagement with these virtual tours, and stakeholders find it challenging to measure their lasting impact on subsequent travel or enrollment decisions in the actual world, emphasizing the pressing need for tools to track both short-term user responses and long-term behavioral changes.

Despite the rising body of data, existing research has studied virtual tours mostly in isolation in either the tourist or the higher education sector. There is no comprehensive analysis that analyzes their promotional functions, user interaction patterns, and implementation issues across both sectors at the same time. Moreover, the quality of research on virtual tours differs quite a lot among technology subtypes, and no cross-domain evaluation has been conducted based on standardized quality standards. This review helps to fill these gaps by synthesizing 70 research articles, published in peer-reviewed journals, to explore the use of virtual tours as digital promotional tools in tourism and higher education and their applications, promotional outcomes, and the factors affecting their success. Three research questions guide this review:

- RQ1. What are the applications and technical subtypes of virtual tours as digital promotional tools in tourism destinations and higher education institutions?
- RQ2. How do virtual tours promote tourism locations and influence potential tourists' decision-making behavior?
- RQ3. What are the determinants of the efficacy of virtual tours as promotional instruments in tourism and higher education, and what are their promotional outcomes?

The paper provides an integrated cross-sectoral viewpoint on the promotion of virtual tours with practical implications for marketing practitioners, tourism organizations, higher education institutions, and researchers.

METHODOLOGY

This study employed a narrative literature review approach to identify and synthesize published research on virtual tours as promotional tools in education and tourism. Narrative reviews are appropriate when the literature spans multiple domains and heterogeneous study designs, allowing thematic synthesis across quantitative, qualitative, and development-based research traditions (Snyder, 2019; Baumeister & Leary, 1997; Ferrari, 2015). The review process comprised three structured stages: establishing eligibility criteria, conducting systematic database searching and source selection, and performing data extraction and thematic synthesis.

Eligibility Criteria

Studies published between 2010 and 2024 and indexed in Scopus, Web of Science, ScienceDirect, or Google Scholar were considered. To be included, a study had to address virtual tours, 360-degree virtual tours, virtual tourism, or immersive virtual environments within tourism promotion, destination marketing, cultural heritage promotion, or higher education institutional marketing contexts. Only peer-reviewed journal articles and formally published research reports written in English were examined. Studies were excluded if they focused on virtual tours in non-educational or non-tourism settings were not indexed in a recognized academic database, or were published outside the stated period.

Search and Selection of Sources

Literature searches were conducted across four databases using a structured query combining virtual environment terms ("virtual tour", "360 virtual tour", "virtual field trip", "virtual campus tour", "immersive virtual environment") with domain terms ("education", "higher education", "university", "tourism", "destination marketing") connected by the AND operator. The original searches returned 610 candidates, which were refined through a three-stage selection procedure. Titles and abstracts were screened first to eliminate non-educational or non-tourism contexts and non-peer-reviewed sources. Full-text eligibility criteria were then applied, and studies not directly addressing virtual tours or immersive environments in tourism promotion, destination marketing, or higher education institutional promotion were excluded. Duplicates were removed in the final stage, yielding 70 papers retained for analysis.

Table 1: Summary of characteristics of reviewed studies by technology subtype (n = 70 papers, 2009–2024).

Technology Subtype	Number of Studies	Total Participants	Sample Size Range	Average Sample Size
360 panorama / 360 video	35	3,200	10–312	91
Web-based VT	18	1,440	15–200	80
VR with HMD	9	540	10–80	60
AR	5	350	20–120	70
3D modelling/walkthrough	3	180	20–80	60

Note: VT = Virtual Tour; VR = Virtual Reality; HMD = Head-Mounted Display; AR = Augmented Reality.

Data Extraction and Synthesis

From each of the 70 selected studies, the following information was extracted: author(s), year of publication, country, educational level or tourism context, type of virtual tour or immersive technology, study design and methodology, key findings related to promotional outcomes, user engagement, visit or enrolment intention, and destination or institutional image, and reported challenges or limitations. Data were organized in extraction matrices to facilitate cross-study comparison. Because study designs, outcome measures, and settings differed substantially, meta-analysis was not appropriate. Thematic synthesis was applied, with themes constructed inductively from the data in line with the interpretive character of narrative review methodology (Snyder, 2019). Where studies produced inconsistent findings, contextual factors such as sample size, discipline, technology type, and geographic location were examined.

RESULTS

This section presents the findings organized according to the four research questions. Each subsection directly addresses the corresponding RQ using synthesis matrices, figures, and evidence drawn from the 70 reviewed studies.

RQ1: Virtual Tour Applications and Technology Deployment

Virtual tours have been adopted as digital promotional instruments across a wide range of institutional and destination contexts. Analysis of the 70 reviewed studies reveals 10 distinct application areas spanning destination marketing, campus recruitment, heritage and museum promotion, virtual field trips, student welfare, hotel and hospitality promotion, sustainable tourism, accessibility, AI and 3D heritage platforms, and platform and user experience development.

Figure 1 presents the distribution of studies by domain. Tourism studies account for 46% of the corpus ($n = 32$) while higher education studies constitute 44% ($n = 31$), with the remaining 10% ($n = 7$) addressing both domains simultaneously. This near-equal split confirms that virtual tours are not a niche tool confined to one sector but function as a cross-domain digital promotional instrument that independently addresses parallel promotional challenges in both tourism and higher education (Pratisto et al., 2022; Samala et al., 2024).

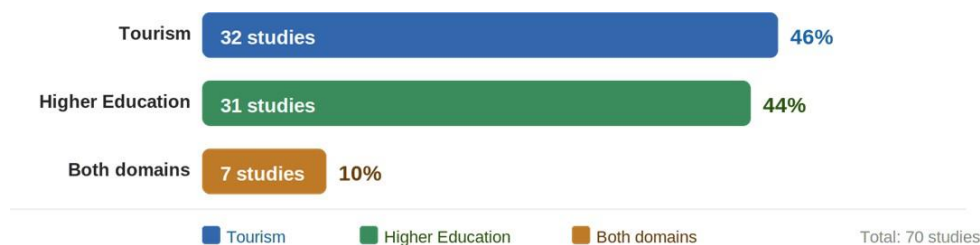


Figure 1: Distribution of reviewed studies by domain

In terms of technology, 360-degree panorama or video is the dominant approach, being identified in 50% of reviewed studies ($n = 35$), reflecting its low development cost, broad device compatibility, and ease of deployment. Web-based virtual tours form the second largest group ($n = 18$, 26%), followed by VR with head-mounted display ($n = 9$, 13%), augmented reality ($n = 5$, 7%), and 3D modelling or AI-integrated platforms ($n = 3$, 4%). Figure 2 presents the distribution of virtual tour technology subtypes identified across the 70 reviewed studies

Figure 2 illustrates the publication trend across all five technology subgroups from 2009 to 2024. A clear upward trajectory is evident from 2015 onwards, with a marked acceleration between 2020 and 2023 attributable to the COVID-19 pandemic, which restricted physical access to campuses and tourist destinations and prompted rapid adoption of virtual tour alternatives. Publications peaked in 2023 across all subgroups before declining in 2024, likely reflecting publication lag rather than a genuine reduction in research activity. The 360-degree panorama subgroup shows the earliest and most sustained publication activity, while VR with HMD and AR subgroups emerged later, around 2015–2016, aligning with the wider availability of consumer-grade headsets.

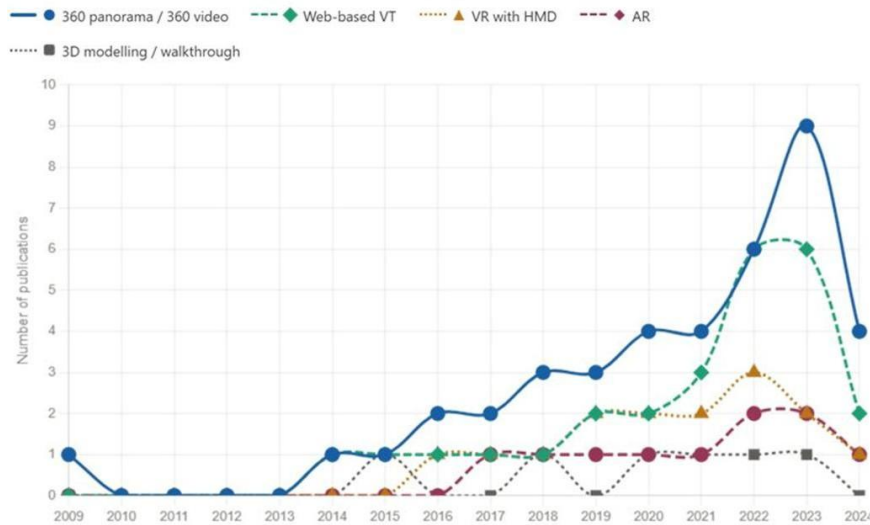


Figure 2: Number of publications by year

Figure 3 further provides a comparative analysis of technology use across the two domains. Tourism studies demonstrate a clear preference for 360-degree video in 57% of cases, reflecting the visual and emotional nature of destination showcasing, as panoramic views of heritage sites and hotels communicate experiential quality more immediately and convincingly than text or flat images (Tussyadiah et al., 2018; Griffin et al., 2017; Rahaman et al., 2023). Higher education studies are distributed more evenly across technology subtypes, with web-based virtual tours occupying a notably stronger role, accounting for 61% of web-based virtual tour studies, given that campus promotion prioritizes functional information delivery, including facility overviews, program details, and spatial navigation, over visual immersion. AR studies appear almost exclusively in tourism contexts, representing 80% of AR applications, a pattern attributable to the technology's strength in overlaying contextual information onto real-world destination imagery. VR with head-mounted display studies, by contrast, are distributed comparably across both domains, with 44% in tourism and 56% in higher education, reflecting the technology's equal suitability for deep immersive experiences in both destination marketing and campus promotion contexts.



Figure 3: Technology use by domain

Table 1 presents a synthesis matrix of virtual tour applications in higher education and cultural heritage institutions. Each entry documents the author, institutional or destination context, technology deployed, promotional function, and key outcome reported. The matrix encompasses 11 studies that represent university campus promotion, museum access, heritage site visibility, and institutional marketing across Indonesia, Malaysia, Italy, Brazil, and Australia.

Table 1: Matrix of Virtual Tours as Promotional Tools in Education and Cultural Heritage Institutions

Author(s) (Year)	Institution / Context	VT Technology	Promotional Function	Key Outcome
Samala et al. (2024)	Universitas Negeri Padang, Indonesia	Web Based, VR photography	University marketing to prospective students	Validity score 0.88; ready for deployment as marketing platform
Arbain et al. (2019)	UNISEL, Malaysia	Mobile panorama VR app	Campus marketing tool	Promoted campus as educational tourism destination; VR enables virtual facility experience
Setiawan & Anggraini (2023)	Universitas Dharma Andalas, Indonesia	Android virtual tour	Promote campus facilities	Effectively enhanced user understanding of campus objects and facilities
Perdana et al. (2020)	Telkom University, Indonesia	Web-based 3D virtual tour	Campus promotional platform	Response time <1.8ms; error rate 0.24%; validated as technical promotional platform
Hafsah (2012)	Pasir Salak Historical Complex, Malaysia	Panoramic virtual museum website	Museum promotion and heritage access	24/7 global access; strong curator feedback; lifelong learning resource
Rahaman et al. (2023)	Subiaco Hotel, Australia	360° panoramic tour	Heritage site promotion	Improved spatial understanding and contextual interpretation for remote audiences
Luzzi et al. (2025)	Museo della Civiltà Contadina, Italy	Gamified 360° VT (ADDIE + ARCS)	Heritage promotion and engagement	Effective adaptive learning; branching scenarios support intergenerational knowledge transmission
Rigoni et al. (2025)	Ouro Preto, Brazil (UNESCO)	Laser scanning + 360° VT	Heritage conservation promotion	24 churches freely accessible; used in professional conservation training
Cardona et al. (2023)	Academic facilities globally	VR-based facility tours	Access promotion across institutions	Removes geographic, financial, and scheduling barriers; confirmed via 32-study review
Purnawan (2025)	Multiple educational levels	Digital VT and VFT media	Pedagogical promotion	Consistently enhances critical thinking in 20 reviewed PRISMA-guided articles
Sprenger et al. (2026)	Universities globally (107 VFTs)	ArcGIS, Google Maps, Genially	Geography and sustainability education promotion	Quality criteria derived for institutional VT development across 7 countries

Note: VT = Virtual Tour; VR = Virtual Reality; ADDIE = Analysis, Design, Development, Implementation, Evaluation; ARCS = Attention, Relevance, Confidence, Satisfaction; PRISMA = Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

In higher education, virtual tours have proven effective in promoting institutional facilities to prospective students constrained by geography, time, or cost. Samala et al. (2024) reported an overall validity score of 0.88 for the VICT web-based campus tour, confirming the application's readiness as a university marketing tool and establishing that immersive web-based tours bridge the gap between virtual exploration and physical visits. Arbain et al. (2019) developed a panoramic VR mobile application for Universiti Selangor as a formal marketing support tool, while Perdana et al. (2020) validated a 3D web-based virtual tour at Telkom University achieving a response time below 1.8 milliseconds and an error rate of 0.24%.

In the cultural heritage domain, virtual tours have emerged as essential promotional and preservation tools for museums and historical sites facing constraints of physical accessibility, institutional budget, and geographic remoteness. Hafsa (2012) documented a panoramic virtual museum website for the Pasir Salak Historical Complex that received strong community and curator support, while Luzzi et al. (2025) demonstrated that gamified 360-degree tours combining ADDIE instructional design and ARCS motivational strategies can effectively promote heritage knowledge while sustaining user engagement through adaptive quizzes and branching narratives. Rigoni et al. (2025) reported that virtual tours of 24 UNESCO-listed Baroque churches in Ouro Preto, Brazil, enabled simultaneous cultural promotion and professional conservation training.

The effectiveness of virtual tours as promotional tools is further substantiated by their capacity to remove institutional barriers to access. Cardona et al. (2023) confirmed, through a review of 32 studies, that virtual tours of academic facilities remove geographical, financial, and scheduling barriers. Purnawan (2025), through a PRISMA-guided systematic review of 20 articles, concluded that digital virtual tour media consistently enhance critical thinking skills, establishing their value as both pedagogical and promotional instruments.

RQ2: Virtual Tours in Tourism Promotion and Tourist Decision-Making

The promotional role of virtual tours in tourism is substantiated across a broad body of evidence, covering destination awareness, pre-visit planning, travel intention, and the fostering of curiosity and emotional engagement among potential visitors. Research demonstrates that virtual tours operate at multiple points along the tourist decision-making continuum, from initial awareness through to actual visit motivation.

At the level of destination awareness, virtual tours have proven effective in bringing underrepresented or geographically isolated destinations to the attention of global audiences. Balogun et al. (2010) proposed a 3D Geo-Spatial VR System for tourist sites in Osun State, Nigeria, establishing that many sites go unvisited because they lack sufficient publicity, and that a VR platform provides easy access and virtual exploration while simultaneously preserving local heritage. Fatma et al. (2019) developed a 360-degree VR tour for 18 tourism sites in Riau Province, Indonesia, demonstrating that immersive 360-degree experiences make users feel present in the environment, substantially improving promotional effectiveness over static text and photographs.

Virtual tours demonstrate a substantive influence on tourist pre-visit decision-making by shaping destination image, stimulating curiosity, and providing experiential information that static media cannot replicate. Petousi et al. (2023) evaluated a 360-degree panoramic virtual tour promoting unknown points of interest in a Greek city with 31 participants, confirming that immersive exposure to unfamiliar attractions sparked curiosity, sustained engagement, and motivated participants toward physical visitation, with 61% reporting curiosity as one of the strongest feelings evoked by the experience. Adnan and Yahaya (2022) investigated the adoption of 360-degree video at Malaysia's National Museum and found that perceived usefulness ($r = 0.500$) and perceived enjoyment ($r = 0.421$) were significant predictors of behavioral intention to visit, establishing a direct link between virtual tour exposure and visit intention consistent with Technology Acceptance Model predictions, with all four hypotheses supported. Wang and Ogi (2021) further demonstrated

that shared VR tourism systems incorporating social presence features strengthen emotional connection with destinations, reinforcing the promotional pull toward physical visitation beyond what individual viewing experiences achieve. Collectively, these findings indicate that virtual tours operate across multiple psychological pathways simultaneously, engaging cognitive interest, affective response, and social motivation, to produce measurable shifts in tourist decision-making behavior before travel.

Research identifies that virtual tours address cultural tourist motives effectively but have yet to adequately engage socio-psychological motivations, including kinship relationships, relaxation, and prestige (Wolf et al., 2023). Miłosz et al. (2025), in a study of 57 Gen Z participants experiencing a VR tour of the Pahlavon Mahmud Mausoleum in Uzbekistan, confirmed that VR functions as a complementary pre-visit motivational tool for sustainable tourism, not a substitute for physical travel.

Table 2: Matrix of Virtual Tours in Tourism Promotion and Tourist Decision-Making Behaviour

Author(s) (Year)	Destination / Context	VT Format	Promotional Mechanism	Behavioural Impact
Balogun et al. (2010)	Osun State, Nigeria	3D GIS-VR system	Destination awareness for under-visited sites	Increased virtual and physical exploration of previously unknown sites
Fatma et al. (2019)	Riau Province, Indonesia	360° VR mobile app (18 sites)	Replace static promotional media	Users feel present in the environment; substantially improved promotional effectiveness
Paredes et al. (2018)	Tungurahua, Ecuador	Geolocation VR environment	Centralize tourist information across 9 counties	Informed visitor decision-making; increased national and foreign visitor flows
Petousi et al. (2023)	Greek city (unknown POIs)	360° panoramic VT	Promote inaccessible attractions to 31 users	Sparked curiosity; motivated physical visit; shifted user perception of destination
Sukardani et al. (2023)	Surabaya, Indonesia	Indonesian Virtual Tour platform	Visual destination promotion	Design elements met; visual selling point identified as needing strengthening
Adnan & Yahaya (2022)	Malaysia National Museum	360° video	Museum visibility and visitor intention	Positive acceptance (TAM); direct link established between VT exposure and visit intention
Wolf et al. (2023)	Multiple VT products (21)	Motive analysis of VT products	Motive-based promotional design	Cultural motives addressed; socio- psychological motives (kinship, relaxation) neglected
Miłosz et al. (2025)	Khiva, Uzbekistan	VR walking tour (57 Gen Z)	Sustainable tourism promotion	VR acceptable; confirmed as complement to, not substitute for, physical visits
Pahlevi et al. (2021)	Kajoetangan Heritage Village, Indonesia	VR portal application	Pandemic- period tourism branding	Raised tourism awareness; effective 3- phase strategy with social media and live streaming

Pratisto et al. (2022)	Global tourism sector	Systematic review (2012–2020)	Pre-trip planning and destination marketing	VT confirmed as suitable promotion and experience tool across all tourism phases
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Note: VT = Virtual Tour; VR = Virtual Reality; GIS = Geographic Information System; POIs = Points of Interest; TAM = Technology Acceptance Model; Gen Z = Generation Z.

RQ3: Factors Influencing Effectiveness

Analysis of the 70 reviewed studies reveals four categories of factors that consistently shape the effectiveness of virtual tours as promotional instruments, regardless of sector: technological factors, content factors, user factors, and organizational factors. Technological quality is a baseline determinant. High-resolution 360-degree panoramic photography, produced with dual fisheye or wide-angle lenses, provides the visual fidelity necessary for realistic presence. VR features including stereoscopic display and spatial audio, amplify immersion beyond what web-based tours produce.

Interactivity through hotspot navigation, information windows, zoom functions, and social sharing determines user engagement depth. Wu et al. (2025) demonstrated that enhanced-type SVVR activities, which incorporate active learning, repetition, and feedback, produce significantly higher engagement across cognitive, emotional, behavioral, and social dimensions compared to fundamental-type SVVR.

Content factors, particularly storytelling through audio narration and curated location sequences, shape user interpretation. Information richness, covering historical data, facility descriptions, program details, and maps, increases decision-making utility. AI-powered narration and branching educational pathways, as demonstrated by Kyropoulou et al. (2025) and Luzzi et al. (2025), substantially extend content depth beyond what static panoramas can provide. User technology readiness varies across audiences. Ajani and Ramaila (2025) found that digital literacy did not significantly predict XR perceptions among Nigerian high school students ($R = 0.032$, $p = 0.513$), suggesting that intuitive design compensates for limited proficiency. Organizational factors, including marketing strategy, distribution channel selection, and investment in development quality, determine whether virtual tours reach their intended audiences. Pahlevi et al. (2021) demonstrated that a three-phase branding strategy combining virtual tours, social media teasers, and live-streaming events produced stronger destination awareness than any single channel alone. Table 3 presents the thematic synthesis of promotional outcomes identified across both domains.

Table 3: Thematic Synthesis of Virtual Tour Promotional Outcomes Across Tourism and Higher Education

Theme	Tourism	Higher Ed.	Evidence from Literature
User Engagement	✓	✓	360° video produces significantly higher engagement than 2D ($F(1,76)=34.38$, $p<.001$); SVVR positively associated with all four engagement dimensions (Wagner et al., 2025; Wu et al., 2025; Petousi et al., 2023)
Immersion & Presence	✓	✓	360° panoramas produce better psychological reactions than plain photography; stereoscopic content increases spatial presence ($M=3.18$ vs. 1.91) and social presence ($M=3.96$ vs. 3.67) (Argyriou et al., 2020; Wagner et al., 2025; Wagler & Hanus, 2018)
Destination / Institution Image	✓	✓	Tourism: enhanced destination image formation leads to visit intention. Higher Ed: 67% confirmed interest in VR campus tours; institutional quality perceived through virtual exposure (Tussyadiah et al., 2018; Samala et al., 2024; Griffin et al., 2017)

Visit / Enrollment Intention	✓	✓	Tourism: 90% stated VT increased visit intention; 92% preferred VT over photos (Moturi et al.). Higher Ed: VT supports well-informed enrollment decisions for remote and international students (Li & Chen, 2019; Samala et al., 2024)
Satisfaction & Trust	✓	✓	Perceived usefulness ($r=0.500$) and enjoyment ($r=0.421$) predict behavioral intention; audio, hotspots, and information richness drive satisfaction; all four TAM hypotheses accepted (Malaysia National Museum Study; Pieterse et al., 2023)

Note: ✓ = outcome documented in studies within this domain. TAM = Technology Acceptance Model; SVVR = Spherical Video-based Virtual Reality.

DISCUSSION

The findings of this review confirm that virtual tours operate as effective digital promotional instruments across both tourism destinations and higher education institutions, with near-equal research representation in both domains and consistent promotional outcomes documented across five themes: user engagement, immersion and sense of presence, destination and institutional image enhancement, visit and enrolment intention, and user satisfaction with the promotional experience.

The geographic distribution of research, summarized in Figure 5, reveals a significant concentration in Southeast Asia and Europe. Indonesia alone contributes 15 of the 70 reviewed studies, driven by intensive university adoption of web-based campus virtual tours across a geographically dispersed archipelago. Africa, Latin America, and Central Asia are entirely absent from the literature. This imbalance is consequential for the generalizability of findings: the infrastructure conditions, institutional capacity, and technology readiness profiles in underrepresented regions differ substantially from those in Indonesia, Malaysia, or Taiwan. Virtual tour effectiveness findings from high-adoption Southeast Asian contexts should not be assumed to transfer directly to settings where internet bandwidth is limited, device penetration is low, and development resources are constrained.

Figure 5 maps the geographic distribution of the 70 reviewed studies. Indonesia leads with 15 studies, followed by Malaysia (8), Taiwan (7), United Kingdom (6), United States (5), and South Korea (4). Countries contributing two studies include Poland, Italy, Mexico, and Australia. Greece accounts for three studies. A large portion of the world, including all of Sub-Saharan Africa, South America, Central Asia, and South Asia is absent from the literature, confirming the geographic concentration identified in Section 3.1 and highlighting the urgent need for research from underrepresented regions.



Figure 5: Geographic distribution of reviewed studies by country (n = 70 papers, 2009–2024).

The consistent identification of socio-psychological promotional gaps by Wolf et al. (2023) points to a structural limitation in how virtual tours are currently designed and evaluated. If virtual tours predominantly address cultural and informational motives while neglecting motivations related to kinship, social belonging, relaxation, and prestige, they are likely reaching only a subset of potential tourist segments. Addressing this gap through social VR features, multi-user experience design, and emotionally resonant content strategies represents an important design priority for the next generation of tourism virtual tours.

CONCLUSION

This narrative review synthesized 70 peer-reviewed studies on virtual tours as digital promotional tools across tourism and higher education, addressing three research questions on their applications, effectiveness, and influencing factors. Virtual tours are confirmed as effective promotional instruments in both domains. Tourism applications concentrate on destination awareness, visit intention, and pre-trip decision support, while higher education applications concentrate on campus recruitment, institutional image, and inclusive access for remote and international students. The 360-degree panorama format dominates due to its accessibility and cost advantages, with wide deployment across both tourism destination marketing and higher education recruitment.

Key challenges encompass technical, interface design, accessibility, institutional, and standardization dimensions. Future development directions include AI-powered promotional personalization, gamification to increase promotional engagement, social VR to address socio-psychological tourist motives, and accessible branching narrative systems. Research priorities include prospective studies measuring actual visit and enrolment outcomes, comparative cross-domain promotional studies, studies in underrepresented geographic regions, and the adoption of validated promotional effectiveness instruments.

For stakeholders, the evidence supports investment in high-quality, information-rich, interactive virtual tours as core components of digital promotion strategies in both tourism and higher education. Organizations that integrate virtual tours into broader multi-channel marketing strategies, rather than deploying them as standalone technical products, consistently achieve stronger awareness and engagement outcomes.

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