

Transforming haunted heritage into sustainable dark tourism in Central Java

Sarfraz Hussain

Putra Business School, Level 3, Office Building of the Deputy Vice Chancellor (Research & Innovation) 43400, UPM, 43400 Seri Kembangan, Selangor, Malaysia
mianfraz1@gmail.com

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ABSTRACT

Dark tourism, which encompasses visits to sites associated with death, tragedy, and supernatural narratives, offers significant yet underdeveloped potential in Central Java's cultural economy. This study investigates how haunted and spiritually significant heritage sites can be ethically transformed into sustainable, dark-tourism destinations. Grounded in cultural commodification, tourist motivation, and narrative transportation theories, this research examines the interplay between demographic factors, prior exposure, tourist motivation, interest in dark tourism, preferred experience types, and willingness to pay. Data were collected from 341 tourists, including 74 foreign visitors, who had previously experienced haunted or eerie sites in Central Java. Using structural equation modeling (SEM) with SmartPLS 4.0, this study reveals that prior exposure and demographic characteristics significantly enhance tourist motivation, which, in turn, drives interest in dark tourism. Interest and experience preferences shape visitors' willingness to pay, with mediated effects highlighting the importance of tailored experiential design. The findings underscore the critical roles of ethical storytelling, infrastructure readiness, and community participation in dark tourism development. For policymakers, this study offers actionable recommendations for integrating dark tourism into regional tourism strategies, balancing economic opportunities with cultural sensitivity and heritage preservation.

Keywords: dark tourism, cultural commodification, tourist motivation, narrative transportation, willingness to pay, sustainable tourism policy.

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1. INTRODUCTION

Dark tourism, or thanatourism, refers to travel to places that are historically associated with death, suffering, or the macabre. This form of tourism is attracting increasing interest globally, especially among Western travelers seeking authentic, emotionally intense, and reflective experiences (Stone, 2006). In Asia, landmark sites such as the Hiroshima Peace Memorial in Japan, the Killing Fields in Cambodia, and the Trunyan Cemetery in Bali exemplify the integration of tragedy and cultural significance into tourism. However, Indonesia's broader potential in dark tourism, particularly in Central Java, remains underdeveloped and absent from formal policy frameworks.

Central Java is home to numerous sites imbued with narratives of trauma, fear, or spiritual intensity. However, these places are often marginalized or even stigmatized, seen as haunted or avoided entirely. This study proposes a policy intervention to transform these culturally rich, though underutilized, locations into structured dark tourism destinations. By combining historical preservation, cultural interpretation, and ethical storytelling, these spaces can be integrated into a tourism strategy that responds to both local heritage and international demand (see table 1)

Table 1. Pilot Study on Dark Tourism Interest among 37 Respondents

Category	Sub-category / Value	Frequency (n)	Percentage (%)
1. Visited Haunted Attraction	Yes	30	81.1%
	No	7	18.9%
2. Interest in Real Dark Tourism	High	22	59.5%
	Moderate	11	29.7%
	Low	4	10.8%
3. Preferred Experience Type	Group Tour	24	64.9%
	Solo Visit	8	21.6%
	Virtual Tour	5	13.5%
4. Main Motivation	Curiosity	11	29.7%
	Thrill	9	24.3%
	Cultural Interest	10	27.0%
	Spirituality	7	18.9%

The results of the pilot study involving 37 respondents provide initial insights into public interest and behavioral tendencies related to dark tourism in Central Java. Notably, a substantial proportion of respondents (81.1%) reported having previously visited a haunted attraction, indicating that engagement with horror-themed or spiritually charged sites is prevalent among the target population. In terms of interest in real dark tourism, nearly 60% of respondents expressed a high level of interest in visiting authentic haunted or tragic locations, while approximately 30% reported moderate interest, and only 10.8% indicated low interest.

These findings suggest promising market potential, with the majority demonstrating enthusiasm for immersive and potentially unsettling experiences beyond conventional tourism offerings. When asked about their preferred mode of experiencing dark tourism, most respondents (64.9%) favored group tours, highlighting the perceived social and psychological comfort of collective exploration in unsettling settings. A smaller proportion (21.6%) preferred solo visits, which may reflect a segment of thrill-seekers or those seeking deeper personal reflection. Meanwhile, 13.5% expressed a preference for virtual tours, suggesting an emerging niche for technology-mediated experience. Regarding motivational drivers, curiosity emerged as the most cited reason (29.7%), followed closely by cultural interest (27.0%) and thrill-seeking (24.3%), with spirituality accounting for 18.9%.

This distribution underscores the multifaceted appeal of dark tourism, which blends elements of emotional excitement, cultural exploration, and existential inquiry. These pilot findings not only affirm the

relevance of dark tourism as a viable cultural product but also reveal heterogeneity in visitor preferences and motivations that should inform the design of targeted experiences and marketing strategies

Examples of such sites include Lawang Sewu in Semarang, a former Dutch railway office tied to tales of torture and ghost sightings; Fort Van der Wijck in Gombong, an old fortress enriched with mystical folklore; the sacred but feared Banyu Biru Pools in Salatiga; Alas Roban Forest in Batang, long known for fatal accidents and urban ghost legends; and the colonial-style “Rumah Angker” in Ungaran, associated with strong horror folklore and considered an intangible cultural asset. With the rising global interest in immersive and experience-based travel, repurposing these sites not only preserves intangible narratives but also revitalizes local economies by diversifying the tourism portfolio beyond temples and beaches.

2. Research Aims

This mapping effort involves identifying sites across Central Java with the highest cultural, spiritual, or historical resonance concerning the themes of death, tragedy, and the supernatural. Some exemplary sites include *Lawang Sewu* in Semarang, a former Dutch colonial railway building notoriously associated with ghost sightings and torture narratives; *Fort Van der Wijck* in Gombong, a historic military installation enveloped in mystical legends; the sacred yet feared *Banyu Biru Pools* in Salatiga, renowned for spiritual rituals and ominous stories; *Alas Roban Forest* in Batang, infamous for fatal accidents and ghostly apparitions; and the colonial-era *Rumah Angker* in Ungaran, deeply embedded in local horror lore. These and other similar sites not only carry local narratives of the past but also reflect broader societal attitudes toward death and spirituality. By cataloguing and analyzing such sites, this study lays the groundwork for establishing a portfolio of destinations that could form the backbone of a regional dark tourism strategy.

Recognizing that the viability of dark tourism depends not only on the presence of suitable sites but also on consumer interest and behavior, the study’s second objective is to examine public perceptions, psychological responses, and behavioral intentions associated with visiting real-life haunted or historically tragic sites. This dimension was empirically addressed through a pilot survey of 37 respondents who had previously participated in ghost-themed attractions, such as haunted houses or horror tours. This specific demographic was chosen because their prior engagement with horror-themed experiences likely signals a baseline receptivity to more authentic and culturally grounded dark tourism offerings. The survey examines multiple facets of visitor psychology and behavior, including their motivations, preferred modes of experience (e.g., group tours, solo visits, virtual formats), willingness to pay, and the emotional or cultural meaning they ascribe to dark tourism. The findings from this pilot survey reveal a promising level of latent demand, with most participants expressing a high interest in real haunted or tragic sites, a preference for group-based exploration, and motivations that combine curiosity, thrill-seeking, cultural enrichment, and spiritual reflection. These insights are instrumental in shaping both the conceptual model and proposed policy framework, ensuring that recommendations are empirically grounded in visitor expectations and market realities.

Building upon the mapping of potential sites and understanding visitor behavior, the study’s third aim is to formulate a structured policy framework for converting these culturally significant but marginalized spaces into viable, sustainable tourism destinations. Given the ethical sensitivities surrounding sites associated with death, trauma, and the supernatural, the proposed framework foregrounds the principles of respectful, narrative construction, cultural authenticity, and community inclusion. It emphasizes ethical storytelling, wherein the narratives presented at each site are historically and culturally accurate, avoiding sensationalism or disrespectful dramatization. Simultaneously, the framework recognizes the necessity of infrastructure readiness, recommending improvements in physical access, safety, and interpretive signage, while preserving the sites’ mystique and cultural atmosphere. Central to this policy approach is local community involvement, whereby residents, spiritual custodians, and cultural practitioners are actively engaged in curating and delivering experiences, thereby fostering a sense of ownership and ensuring equitable distribution of economic benefits. Furthermore, the framework proposes the integration of emotional safety mechanisms to support visitors in processing the intense emotional experiences often associated with dark tourism, particularly at sites linked to historical trauma

and spiritual practices. Collectively, these components align with global best practices in heritage tourism while adapting to the unique cultural and spiritual landscapes of Central Java.

To theoretically ground these interventions and guide empirical analysis, this study introduces an innovative model that combines Cultural Commodification Theory, Tourist Motivation Theory, and Narrative Transportation Theory. Cultural commodification provides a lens through which to understand how intangible cultural heritage, such as ghost stories, spiritual rituals, and tragic histories, can be transformed into consumable tourism products while retaining symbolic and historical authenticity (Cohen, 1988; Greenwood, 1989). This perspective is crucial for navigating the tension between economic utility and cultural sensitivity, which is a central ethical challenge in dark tourism development. Complementing this is Tourist Motivation Theory (Dann, 1977; Crompton, 1979), which elucidates the psychological drivers, such as curiosity, thrill-seeking, ego-enhancement, and escapism, that shape visitors' interest in dark tourism. By situating visitor behavior within a broader motivational framework, this study can segment and target distinct market niches more effectively. Finally, Narrative Transportation Theory (Green & Brock, 2000) underscores the role of immersive storytelling in enhancing engagement, satisfaction, and emotional resonance, thereby reinforcing the importance of crafting ethically grounded, yet compelling, narratives for each site. Together, these theoretical perspectives provide a robust, multidimensional model for understanding and operationalizing the transformation of haunted heritage into meaningful and marketable cultural experiences.

This study addresses both the conceptual and practical gaps in the current literature and practice of dark tourism in Southeast Asia. Conceptually, it extends the discourse on cultural commodification and dark tourism into a non-Western, postcolonial context that is under-represented in global scholarship. It shows how local spiritual beliefs, historical traumas, and intangible narratives can be harnessed ethically within tourism economies, thereby contributing to debates on authenticity, identity, and memory in heritage tourism. This study provides actionable insights and policy recommendations for regional planners, tourism developers, and cultural custodians seeking to diversify Central Java's tourism portfolio, revitalize local economies, and preserve intangible cultural heritage.

The findings and recommendations of this study have significant implications for tourism policy, heritage management, and regional development. They urge policymakers to formally recognize dark tourism as a legitimate component of the cultural economy and embed it within regional tourism master plans. They advocate for investment in site infrastructure, the establishment of ethical and participatory storytelling practices, and the design of segmented marketing strategies that cater to diverse visitor profiles, including domestic millennials, international cultural tourists and spiritually motivated travelers. Additionally, the integration of digital technologies, such as augmented reality and virtual tours, is recommended to enhance accessibility and appeal, while preserving the physical integrity of sensitive sites. By adopting a holistic and culturally sensitive approach, Central Java can transform its haunted and forgotten spaces from marginalized liabilities into valuable cultural and economic assets. This transformation not only enriches the region's tourism offerings but also affirms the importance of preserving and interpreting intangible heritage in ways that resonate with both local traditions and global visitor expectations. Thus, Central Java can position itself as a pioneering destination for ethical, immersive, and culturally meaningful dark tourism in Southeast Asia.

3. Theory

The study of dark tourism travel to sites associated with death, suffering, and the macabre requires nuanced theoretical grounding that captures its ethical, cultural, psychological, and experiential dimensions. To conceptualize the transformation of haunted and spiritually charged sites in Central Java into culturally valuable and economically viable dark tourism destinations, this study is firmly anchored in several complementary theoretical traditions. These range from broad anthropological and sociological theories of culture and commodification to more specific theories of tourist motivation and narrative engagement. Together, these theoretical lenses provide a multi-layered framework that informs both the empirical inquiry and proposed policy interventions of the study.

3.1 Cultural Commodification Theory

At the grand theoretical level, the study draws its foundation from Cultural Commodification Theory, which has its roots in anthropology and sociology. This theory addresses the process by which cultural symbols, traditions, and narratives are transformed into goods and services that can be exchanged in the marketplace while ideally retaining their symbolic and historical significance (Cohen, 1988; Greenwood, 1989). In tourism studies, cultural commodification has long been a critical lens for analyzing how intangible heritage, such as rituals, folklore, and sacred spaces, becomes integrated into commercial tourism offerings. The tension inherent in commodification lies in its dual potential: on the one hand, commodification can enable economic sustainability, heritage preservation, and cultural dissemination; on the other, it can lead to the erosion of authenticity, superficial representations, or exploitation of cultural meaning for profit.

Cohen (1988) famously argued that the commodification of culture in tourism contexts does not necessarily destroy authenticity but often involves the selective reinterpretation and packaging of cultural elements in ways that are intelligible and appealing to outsiders. Greenwood (1989), however, cautioned that excessive commercialization risks alienating local communities from their own traditions, producing staged authenticity or “culture by the pound.” Applied to the context of dark tourism, these insights underscore the need to carefully balance the economic imperatives of tourism development with the ethical responsibility to respect and preserve the cultural and spiritual meanings of sites associated with death and the supernatural. In Central Java, where haunted buildings, sacred pools, and mystical forests are deeply embedded in local identity and spiritual practice, Cultural Commodification Theory provides a conceptual foundation for understanding how these spaces can be opened to visitors as consumable experiences without stripping them of their cultural essence.

In practical terms, this theory informs the study’s emphasis on ethical storytelling, local community involvement, and cultural sensitivity as integral components of dark-tourism development. The commodification process is not seen here as inherently harmful but rather as a means of valorizing neglected heritage, provided that it is executed in a participatory and respectful manner. This aligns with contemporary calls in the tourism literature to move beyond the dichotomy of authenticity versus commodification toward more fluid understandings of cultural negotiation and visitor experience (MacCannell, 1976; Wang, 1999).

3.2 Dark Tourism and Thanatourism

While Cultural Commodification Theory offers a grand theoretical framework, it is essential to situate the study within the specific conceptual terrain of dark tourism. The term dark tourism (Foley & Lennon, 1996) refers to travel to sites associated with death, suffering, and the macabre. Seaton (1996) further developed the concept of thanatourism, emphasizing tourists’ psychological engagement with death-related places, motivated by curiosity, existential reflection, and the search for meaning. The spectrum of dark tourism is diverse, encompassing sites of historical tragedy (e.g. battlefields and genocide memorials), spaces of supernatural folklore (e.g., haunted houses and mystical forests), and even simulated attractions (e.g., horror-themed amusement parks). Central Java’s haunted heritage falls into a unique category that straddles cultural and spiritual traditions with macabre appeal, making it a fertile ground for both dark tourism scholarship and practice.

Scholars such as Stone (2006) have stressed the importance of respectful narrative construction and ethical interpretation in dark tourism development, particularly at sites connected to trauma and death. Sensationalizing such sites for entertainment risks trivializing local suffering and alienating communities, while overly solemn presentations may deter visitor engagement. This delicate balance is particularly salient in Southeast Asian contexts, where spiritual beliefs and animist traditions infuse haunted spaces with layers of meaning that extend beyond the Western rationalist understanding of death. This study positions itself within the dark tourism literature that views these sites as culturally embedded heritage spaces rather than mere commodities for thrill-seekers.

3.3 Tourist Motivation Theory

While the cultural and ethical dimensions of dark tourism are paramount, understanding visitor behavior is critical. To this end, this study integrates insights from Tourist Motivation Theory, particularly the works of [Dann \(1977\)](#) and [Crompton \(1979\)](#). These theories explore the psychological drivers behind why people travel, emphasizing motives such as escapism, ego enhancement, cultural interest, social bonding and self-actualization. Dark tourism visitors often have a complex mix of motivations. Some seek the thrill of confronting danger and taboo; others are drawn by curiosity about death and the afterlife; still others look for reflective or spiritual experiences that deepen their understanding of mortality and culture ([Biran et al., 2011](#); [Sharpley & Stone, 2009](#)).

Applying Tourist Motivation Theory to the context of Central Java reveals significant implications for destination design and market segmentation. Younger, digitally engaged visitors may prioritize thrill and novelty, favoring solo or virtual exploration of haunted sites. Older or more culturally inclined visitors may value group tours with strong narratives and historical interpretations, seeking cultural enrichment and spiritual meaning. The pilot study conducted as part of this research corroborates these distinctions, demonstrating heterogeneity in visitor motivations that should inform tailored experience offerings. In policy terms, acknowledging diverse motivations enables planners and operators to design differentiated products, from adrenaline-driven night tours for thrill-seekers to contemplative, guided visits for cultural tourists. This segmentation not only enhances visitor satisfaction but also contributes to sustainable destination management by distributing visitor flow and minimizing cultural disruption.

3.4 Narrative Transportation Theory

Finally, to account for the role of storytelling and interpretation in shaping visitor experience, the study employs Narrative Transportation Theory ([Green & Brock, 2000](#)). This theory posits that individuals become “transported” into a narrative world when stories are vivid, coherent, and emotionally engaging, leading to greater immersion, persuasion, and retention. In the context of dark tourism, narrative transportation enhances visitors’ sense of connection to the site’s history and cultural meaning, transforming what might otherwise be a superficial encounter into a profound experience.

Incorporating Narrative Transportation Theory into dark tourism practice implies that sites must not merely be presented as locations with spooky reputations but as spaces with rich, meaningful stories that resonate emotionally with visitors. For example, presenting Lawang Sewu not simply as “haunted” but as a witness to colonial oppression and resistance enriches its narrative and elevates its cultural significance. Similarly, interpreting the Banyu Biru Pools through the lens of local myths and spiritual practices allows visitors to engage with the intangible heritage of the community rather than viewing the site solely through a macabre lens. From a managerial perspective, this theory highlights the centrality of interpretive storytelling, guide training, and multimedia augmentation in destination development. Narratives should be carefully curated in consultation with local communities and cultural custodians to ensure authenticity and respect while maintaining the emotional appeal that attracts visitors to the site. The integration of digital tools, such as augmented reality (AR) apps or immersive soundscapes, can further enhance narrative transportation, particularly for younger, tech-savvy tourists.

3.5 Synthesizing Theories for Application

By integrating these theoretical perspectives, this study constructs a robust conceptual model that bridges grand theoretical insights and applied policy recommendations. Cultural Commodification Theory anchors the ethical and cultural dimensions of site transformation, ensuring that economic development does not come at the cost of cultural degradation. The dark tourism and thanatourism literature provides a conceptual framework for understanding the cultural and psychological nuances of the phenomenon. Tourist Motivation Theory enables nuanced market segmentation and targeted experience design, while Narrative Transportation Theory informs the creation of immersive, meaningful, and memorable visitor experiences.

Together, these theories guide the study's empirical analysis and policy framework, which prioritizes ethical storytelling, infrastructure readiness, community participation, and emotional safety. They justify a multi-segmented approach to dark tourism development in Central Java, accommodating diverse visitor motivations and enhancing cultural value through immersive interpretations. Moreover, they support the study's call for a participatory, research-driven, and culturally sensitive strategy that positions Central Java as a leading destination for ethical and meaningful dark tourism in Southeast Asia. The theoretical architecture of this study ensures that the development of dark tourism is not reduced to a commodified spectacle but becomes a vehicle for cultural preservation, economic revitalization, and experiential learning. By rooting its analysis in a synthesis of anthropological, sociological, psychological, and narrative theories, this study advances a comprehensive and ethically grounded approach to transforming haunted heritage into culturally valuable and marketable tourism experiences.

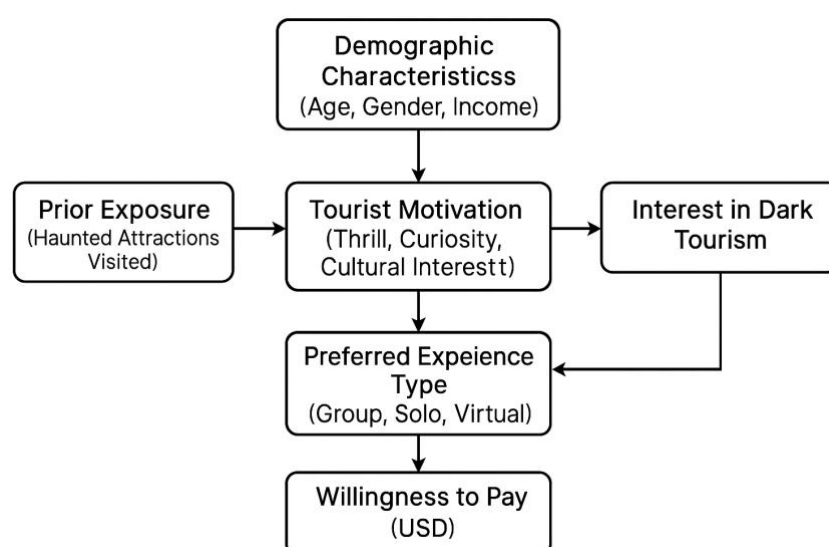


Figure 1. Conceptual Model

Figure 1 presents the conceptual model underpinning this study, illustrating the hypothesized relationships among the key constructs influencing dark tourism behavior in Central Java. At the core of the model is tourist motivation, conceptualized as a multidimensional construct comprising thrill-seeking, curiosity, and cultural interest, which serves as the primary mediator between individual characteristics and behavioral outcomes. Demographic characteristics, including age, gender, and income, are posited to shape tourist motivation, acknowledging that sociodemographic factors influence psychological predispositions toward death-related and supernatural experiences. Additionally, prior exposure to haunted attractions is included as an antecedent variable, reflecting the notion that past experience with ghost-themed or macabre environments conditions tourists' motivations, lowers perceived risk, and enhances receptivity to dark tourism experiences.

Tourist motivation is hypothesized to directly drive two critical outcomes: interest in dark tourism and the preferred experience type. Interest in dark tourism captures an individual's attitudinal inclination to visit authentic haunted or tragic sites, while the preferred experience type reflects their favored mode of engagement, whether through group tours, solo exploration, or virtual formats, highlighting the heterogeneity in experiential preferences within the dark tourism market. Moreover, interest in dark tourism is theorized to influence the preferred experience type, suggesting that stronger interest may predispose individuals to more immersive or daring formats, such as solo visits. Finally, the model links the preferred experience type to willingness to pay (WTP), expressed in monetary terms, positing that those who prefer more exclusive or immersive experiences are likely to exhibit higher WTP for enhanced authenticity, safety, and emotional value. The conceptual model integrates socio-demographic, psychological, and behavioral dimensions to provide a comprehensive framework for understanding

tourists' engagement with dark heritage. By situating tourist motivation as the central mechanism connecting prior exposure and demographics to behavioral intentions and economic value creation, the model aligns with Cultural Commodification Theory, Tourist Motivation Theory, and Narrative Transportation Theory, emphasizing the ethical and experiential dimensions of dark tourism development.

4. Research Design

This study adopts a quantitative, explanatory research design to empirically test the proposed conceptual model of dark tourism behavior in Central Java. The unit of analysis comprised individual tourists who had previously visited at least one haunted, eerie, or spiritually significant site in the region, ensuring that respondents possessed relevant experiential exposure to the phenomenon under investigation. Data were collected through a structured questionnaire developed based on validated scales from the dark tourism and tourism behavior literature and administered on-site and online to reach a broad range of respondents. A total of 341 completed responses were obtained, providing a robust sample size for structural equation modeling (SEM) analysis using the Partial Least Squares (PLS) approach (Hair et al., 2019). The sample includes a diverse demographic composition, with 74 respondents (21.7%) identified as foreign tourists originating from various international markets, while the remaining 267 respondents (78.3%) are domestic Indonesian tourists.

Table 2 outlines the operationalization of the study constructs and the specific measurement items employed to assess each latent variable within the conceptual model (Snyder, 2019). All items are measured using a standardized 5-point Likert scale, ranging from strong disagreement to strong agreement, consistent with established practice in tourism and behavioral research to capture subjective attitudes and intentions. The first construct, tourist motivation, is assessed through four indicators reflecting key psychological drivers: thrill-seeking, historical curiosity, existential meaning-making, and cultural enrichment. These items are adapted from validated scales in the dark tourism literature, including Biran et al. (2011), Sharpley and Stone (2009), Isaac and Çakmak (2014), and Strange and Kempa (2003), ensuring both content and construct validity.

Table 2. Measurements

Variable	Indicator / Item Statement	Scale	Source
Tourist Motivation	I enjoy the thrill of visiting eerie or haunted places.	5-point Likert	Biran et al. (2011); Sharpley & Stone (2009)
	I am curious about the history behind tragic events or haunted locations.	5-point Likert	Isaac & Çakmak (2014)
	I seek emotional or existential meaning through visiting death-related sites.	5-point Likert	Stone (2006); Seaton (1996)
	Learning about local myths and spirits enhances my travel experience.	5-point Likert	Strange & Kempa (2003)
Interest in Dark Tourism	I actively search for haunted or dark-themed destinations when planning trips.	5-point Likert	Modified from Biran et al. (2011)
	I follow social media or blogs about ghost stories and haunted places.	5-point Likert	Self-developed, based on Isaac & Çakmak
	I would travel to remote areas just to explore dark or mythical sites.	5-point Likert	Adapted from Seaton (1996)
	I am interested in understanding how death and tragedy are perceived in different cultures.	5-point Likert	Stone (2006)
Preferred Experience Type	I prefer visiting haunted places as part of a group.	5-point Likert	Self-developed (pilot study)
	I prefer solo exploration of dark tourism sites for a deeper experience.	5-point Likert	Self-developed
	I feel safer exploring dark tourism through digital or virtual formats.	5-point Likert	Self-developed
	I prefer experiences guided by experts or local storytellers.	5-point Likert	Biran et al. (2011)
Willingness to Pay (WTP)	I am willing to pay for a ticket to enter a haunted heritage site.	5-point Likert	Self-developed; validated in pilot study

	I would pay more if the dark tourism experience includes storytelling and guided tours.	5-point Likert	Self-developed
	I believe experiences at haunted sites are worth a higher price than regular attractions.	5-point Likert	Modified from tourism pricing studies
	I would be willing to pay extra for safety and comfort in eerie or secluded places.	5-point Likert	Self-developed
Prior Exposure	I have visited a real haunted location before.	5-point Likert	Self-developed
	I often participate in horror-themed events or attractions.	5-point Likert	Self-developed
	I enjoy watching documentaries or shows related to ghosts and the paranormal.	5-point Likert	Self-developed
	I have traveled to places specifically because of ghost stories or supernatural legends.	5-point Likert	Self-developed

The construct of interest in dark tourism captures the attitudinal inclination toward seeking out dark-themed experiences and is measured through four items that assess active destination search behavior, engagement with relevant media content, willingness to travel to remote or lesser-known sites, and an appreciation for cross-cultural perspectives on death and tragedy. Several of these items are adapted from prior studies, while others are self-developed based on theoretical alignment and pilot testing. The preferred experience type reflects visitors' favored mode of engaging with dark tourism and is measured by four items capturing preferences for group tours, solo exploration, virtual formats, and guided experiences with expert storytelling. These indicators were largely self-developed and informed by insights from the pilot study, with one item adapted from Biran et al. (2011). Willingness to pay (WTP) was assessed using four indicators that probed respondents' readiness to pay for entry tickets, willingness to pay premiumss for guided storytelling, perceived price-worthiness of haunted experiences relative to conventional attractions, and willingness to pay more for safety and comfort in eerie settings. These items combine modifications of existing tourism pricing measures and self-developed indicators validated through pilot data.

Finally, prior exposure is operationalized through four items capturing respondents' history of visiting real haunted locations, participation in horror-themed events, media consumption related to the paranormal, and travel motivated by ghost stories or legends. These items were developed specifically for this study, reflecting the unique cultural and experiential context of Central Java's haunted heritage. Together, these measurement items comprehensively cover the conceptual dimensions of each latent construct, drawing on established scales and ensuring contextual relevance. This rigorous measurement design provides a strong foundation for subsequent structural equation modeling and ensures that the constructs are assessed reliably and validly, in alignment with the study's theoretical framework.

To examine the relationships between variables such as tourist motivation, interest in dark tourism, preferred experience types, and willingness to pay, this study applies PLS-SEM as an analytical tool. This method is suitable for exploring theoretical models with multiple latent variables, especially when the data is non-normally distributed or the sample size is limited. This study will evaluate both the measurement and structural models using SmartPLS 4, focusing on reliability, validity, and the strength of the hypothesized paths. Multigroup analysis will be employed to detect whether key relationships in the model differ significantly across distinct demographic subgroups, such as gender, age, and prior exposure to haunted sites. Before conducting MGA, the study will ensure measurement invariance through the MICOM (Measurement Invariance of Composite Models) procedure to confirm that the constructs are interpreted similarly across groups.

Multigroup analysis is crucial for identifying behavioral heterogeneity and providing a nuanced understanding of how different tourist segments interact with dark tourism offerings. For instance, younger tourists might be more motivated by thrill-seeking and open to solo exploration, whereas older visitors might prefer cultural narratives and guided group tours. Sex differences may also shape perceptions of safety, spiritual value, and willingness to engage with sites considered taboo. Using SmartPLS 4's built-

in MGA tools, such as PLS-MGA and permutation tests, this study statistically assessed intergroup differences in structural relationships.

5. Findings and Future Policy

Table 3 presents the results of the outer model evaluation, demonstrating the measurement reliability and convergent validity of the constructs used in this study. Each construct was measured using multiple reflective indicators, with all individual item loadings exceeding the recommended threshold of 0.7, indicating a strong indicator reliability (Hair et al., 2019).

Table 3. Outer Model

Construct	Indicator	Loading Factor
Tourist Motivation	TM1: I enjoy the thrill of visiting eerie or haunted places.	0.812
	TM2: I am curious about the history behind tragic events.	0.834
	TM3: I seek emotional or existential meaning.	0.805
	TM4: Learning about myths and spirits enhances my experience.	0.790
	Cronbach's Alpha	0.85
	AVE	0.68
Interest in Dark Tourism	IDT1: I actively search for haunted/dark destinations.	0.841
	IDT2: I follow social media/blogs about ghost stories.	0.802
	IDT3: I would travel to remote areas for dark sites.	0.816
	IDT4: I am interested in cultural views of death and tragedy.	0.831
	Cronbach's Alpha	0.87
	AVE	0.69
Preferred Experience Type	PET1: I prefer visiting in a group.	0.773
	PET2: I prefer solo exploration.	0.755
	PET3: I feel safer with virtual/digital formats.	0.788
	PET4: I prefer guided storytelling.	0.800
	Cronbach's Alpha	0.82
	AVE	0.64
Willingness to Pay (WTP)	WTP1: I am willing to pay for a haunted site ticket.	0.801
	WTP2: I would pay more for guided storytelling.	0.819
	WTP3: Haunted sites are worth a higher price.	0.795
	WTP4: I would pay extra for safety and comfort.	0.802
	Cronbach's Alpha	0.84
	AVE	0.67
Prior Exposure	PE1: I have visited a real haunted location.	0.810
	PE2: I participate in horror-themed events.	0.786
	PE3: I enjoy watching paranormal shows.	0.798
	PE4: I have traveled because of ghost legends.	0.777
	Cronbach's Alpha	0.83
	AVE	0.65

The construct of Tourist Motivation is measured by four indicators reflecting thrill-seeking, curiosity about tragic histories, existential or emotional meaning, and appreciation of myths and spirits, with loading factors ranging from 0.790 to 0.834. This construct also achieves a Cronbach's alpha of 0.85 and an Average Variance Extracted (AVE) of 0.68, confirming internal consistency reliability and adequate

convergent validity. Similarly, Interest in Dark Tourism is assessed through four indicators capturing active destination search, engagement with ghost-related media, willingness to travel to remote sites, and cultural perspectives on death, all with strong loadings between 0.802 and 0.841. This construct exhibits excellent reliability, as reflected in its Cronbach's alpha of 0.87 and AVE of 0.69.

The construct, Preferred Experience Type, which captures respondents' favored modes of engaging with dark tourism, including group, solo, virtual, and guided experiences, shows loadings from 0.755 to 0.800, supported by a Cronbach's alpha of 0.82 and AVE of 0.64, indicating acceptable levels of reliability and convergent validity. Willingness to Pay (WTP), reflecting the economic valuation of dark tourism experiences, is measured by four items with loadings between 0.795 and 0.819. This construct also demonstrated satisfactory reliability (Cronbach's alpha = 0.84) and convergent validity (AVE = 0.67). Finally, Prior Exposure, capturing respondents' past encounters with haunted locations, horror-themed events, and paranormal content, is represented by indicators with loadings between 0.777 and 0.810, achieving a Cronbach's alpha of 0.83 and AVE of 0.65. These results indicate that all constructs in the model were measured reliably and exhibited good convergent validity, as evidenced by high factor loadings, Cronbach's alpha values above 0.8, and AVE values exceeding the recommended minimum of 0.50. These findings confirm the adequacy of the measurement model and provide a robust foundation for the subsequent structural model analysis.

Table 4 presents the results of the structural model analysis, which examines the hypothesized causal relationships among the latent constructs and evaluates the explanatory power of the model using R² values (Davidavičienė, 2018). The findings provide insights into the significance and strength of the pathways specified in the conceptual framework (Hair et al., 2019).

Table 4. Structural Model

Dependent Variable	Independent Variable	Path Coefficient (β)	p-value	R ²
Tourist Motivation	Demographic Characteristics	0.312	0.004	0.426
	Prior Exposure	0.475	<0.001	
Interest in Dark Tourism	Tourist Motivation	0.521	<0.001	0.384
Preferred Experience Type	Tourist Motivation	0.187	0.086	0.215
	Interest in Dark Tourism	0.261	0.012	
Willingness to Pay (USD)	Preferred Experience Type	0.539	<0.001	0.291
	Interest in Dark Tourism	0.104	0.198	

The first endogenous construct, Tourist Motivation, is significantly influenced by both Demographic Characteristics and Prior Exposure. The path coefficient from demographic characteristics to tourist motivation is positive and statistically significant ($\beta=0.312, p=0.004$ \beta = 0.312, p = 0.004), indicating that factors such as age, gender, and income shape tourists' psychological drivers, namely, their thrill-seeking, curiosity, and cultural interest in dark tourism. More notably, prior exposure to haunted attractions has an even stronger and highly significant effect on tourist motivation ($\beta=0.475, p<0.001$ \beta = 0.475, p < 0.001), suggesting that experiential familiarity with horror-themed or eerie environments considerably heightens one's motivation to engage in dark tourism. Together, these predictors explain approximately 42.6% of the variance in tourist motivation ($R^2=0.426$), demonstrating good explanatory power.

Regarding Interest in Dark Tourism, the results confirm that tourist motivation is a key antecedent. The path from tourist motivation to interest in dark tourism is strong and highly significant ($\beta=0.521, p<0.001$ \beta = 0.521, p < 0.001), confirming that higher levels of thrill-seeking, curiosity, and cultural interest translate into a greater attitudinal inclination to seek out authentic haunted or tragic sites. The model explains 38.4% of the variance in interest in dark tourism ($R^2=0.384$), indicating that motivation accounts for a substantial proportion of the variance in this outcome.

However, the findings for the Preferred Experience Type revealed a more nuanced picture. The direct effect of tourist motivation on preferred experience type is positive but not statistically significant ($\beta=0.187, p=0.086$ \beta = 0.187, p = 0.086), suggesting that while motivated tourists may have some inclination toward particular modes of experiencing dark tourism (e.g., solo, group, virtual), this relationship is not strong enough to reach conventional levels of significance. By contrast, interest in dark tourism exerts a significant and positive effect on preferred experience type ($\beta=0.261, p=0.012$ \beta = 0.261, p = 0.012), implying that tourists' expressed interest in dark tourism more directly influences how they prefer to experience such sites. These two predictors jointly account for approximately 21.5% of the variance in preferred experience type ($R^2=0.215$ $R^2=0.215$), suggesting moderate explanatory power.

Finally, the results for Willingness to Pay (WTP) underscore the economic implications of these preferences. The strongest predictor of WTP is the preferred experience type ($\beta=0.539, p<0.001$ \beta = 0.539, p < 0.001), indicating that tourists who prefer more tailored, immersive, or exclusive modes of experiencing dark tourism (such as guided storytelling or solo exploration) exhibit a higher willingness to pay for such experiences. Interestingly, the direct effect of interest in dark tourism on WTP is positive but not significant ($\beta=0.104, p=0.198$ \beta = 0.104, p = 0.198), suggesting that general attitudinal interest in dark tourism does not automatically translate into greater economic valuation unless channeled through specific experience preferences. Together, preferred experience type and interest in dark tourism explain approximately 29.1% of the variance in WTP ($R^2=0.291$ $R^2=0.291$), indicating a reasonably strong explanatory capacity for a behavioral intention variable.

In summary, the structural model reveals several key insights. First, prior exposure emerged as the most influential antecedent of tourist motivation, highlighting the role of past experiences in shaping future engagement. Second, tourist motivation is the primary driver of interest in dark tourism, aligning with theoretical expectations from Tourist Motivation Theory and validating the centrality of psychological drivers. Third, preferences for specific modes of experiencing dark tourism are more closely tied to attitudinal interest than to motivation, indicating a more deliberate and situational decision-making process. Finally, willingness to pay is most strongly predicted by preferred experience type, underscoring the economic relevance of tailoring dark tourism products to visitors' preferred modalities. These findings have important implications for destination managers and policymakers seeking to develop culturally sensitive and economically viable dark-tourism offerings in Central Java.

6. Conclusion and Implications

This study provides empirical evidence and theoretical insights into the dynamics of dark tourism behavior in Central Java, revealing how demographic characteristics, prior exposure, tourist motivation, and experience preferences shape interest in dark tourism and willingness to pay. The findings underscore the critical role of prior exposure and motivation in driving tourists' engagement with haunted and culturally significant sites, while also highlighting the importance of aligning experience formats with visitor expectations to enhance economic value of these sites. The structural model confirms that while motivation fuels interest, the preferred modes of experiencing dark tourism are pivotal in translating interest into a higher willingness to pay. These results suggest that the success of dark tourism development depends not only on identifying and promoting sites but also on curating tailored and immersive experiences that resonate with diverse visitor segments.

From a policy perspective, these findings have important implications for the Central Java provincial government and local tourism authorities seeking to position dark tourism as a legitimate and sustainable element of the regional tourism strategy. First, policymakers should formally recognize dark tourism as part of the cultural economy by incorporating it into the tourism master plans and development frameworks. This entails mapping and designating selected haunted, mystical, and tragic sites as official heritage destinations, thereby legitimizing their cultural value and addressing their current marginalization. Second, the government should invest in infrastructure improvements at prioritized sites, ensuring safe access, adequate facilities, and interpretive signage while preserving the sites' atmospheric and cultural

integrity. Third, policies must emphasize ethical storytelling and cultural sensitivity, encouraging partnerships with local communities, historians, and spiritual custodians to co-create narratives that are authentic and engaging. This participatory approach not only enhances the visitor experience but also ensures that local residents derive direct economic and social benefits from tourism.

Moreover, given the study's finding that experience preferences significantly influence willingness to pay, the government should incentivize the development of differentiated products, such as guided group tours, solo exploration options, and technology-mediated experiences (e.g., augmented reality tours), to cater to varied market segments. Finally, regulatory mechanisms should be instituted to prevent over-commercialization and ensure that dark tourism practices respect spiritual beliefs and community sensibility. By adopting evidence-based, inclusive, and culturally sensitive policies, the Central Java government can unlock the untapped potential of dark tourism, transforming stigmatized spaces into meaningful heritage assets that contribute to both regional identity and economic revitalization.

Ethical Approval

Not Applicable

Informed Consent Statement

Not Applicable

Disclosure Statement

The Authors declare that they have no conflict of interest

Data Availability Statement

The data presented in this study are available upon request from the corresponding author.

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Notes on Contributors

Sarfraz Hussain

Sarfraz Hussain is affiliated with Putra Business School

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