Journal of Asian Scientific Research
ISSN(e): 2223-1331
ISSN(p): 2226-5724
DOI: 10.55493/5003.v14i2.5057
Vol. 14, No. 2, 179-196.

URL: www.aessweb.com

The role of local communities in the conservation of cultural heritage sites: A case study of Vietnam

Nguyen Thanh Nam[1]
Nguyen Nghi Thanh[2+]

[1]*Hanoi University of Culture, Vietnam.*
Email: namnt@huc.edu.vn
[2]*Vietnam National Academy of Public Administration, Vietnam.*
Email: thanhnn7899@gmail.com

(+ Corresponding author)

Article History
Received: 19 January 2024
Revised: 1 March 2024
Accepted: 14 March 2024
Published: 25 April 2024

Keywords
Community-based monitoring
Conservation
Cultural heritage
Cultural heritage sites
Involvement
Local community
Preservation
Traditional knowledge
Vietnam.

ABSTRACT

This study examines the significant impact of local community engagement on conserving cultural heritage sites, focusing on active participation, cultural preservation, decision-making, and oversight. Utilizing Structural Equation Modeling (SEM) for analysis, it evaluates how community involvement aids in the maintenance and protection of tangible and intangible heritage aspects. Findings reveal substantial improvements in conservation outcomes due to active community participation, highlighting the critical role of local communities in preserving heritage integrity and cultural values. This emphasizes the necessity of grassroots involvement for lasting cultural legacy preservation. Furthermore, the study stresses the importance of incorporating indigenous knowledge and traditions into conservation strategies to ensure culturally relevant and sustainable outcomes. Although based in Vietnam, the implications of this research are global, advocating for inclusive, community-centric conservation practices that emphasize environmental sustainability and cultural significance. This approach signifies a transformative shift towards heritage conservation models that align with local community ethos, offering valuable insights and recommendations for a more integrative and culturally attuned preservation strategy.

Contribution/ Originality: This study offers insights into how local community engagement positively impacts the preservation of cultural heritage sites. Through SEM, it demonstrates the significant role of community involvement in enhancing conservation outcomes and advocating for inclusive, culturally resonant, and sustainable conservation approaches globally.

1. INTRODUCTION

Local communities play a fundamental and transformative role in the complex domain of cultural heritage conservation. This scholarly work takes Vietnam, with its extensive historical depth and rich cultural diversity, from ancient fortifications and temples to enduring cultural practices, as a focal point to examine local communities' nuanced roles and challenges in preserving their cultural heritage [1].

At the core of our investigation is the assertion that local communities are critical actors in the conservation process, engaging not as passive onlookers but as essential contributors. Their profound understanding, traditional methodologies, and regular interactions with heritage sites form the backbone of sustainable conservation efforts [2]. This research attempts to elucidate the complex dynamics between these communities and the heritage they

are committed to preserving, emphasizing their vital role in maintaining Vietnam's cultural and historical integrity [3].

Employing Vietnam as a case study, this research aims to enrich the global discourse on the pivotal role of local community engagement in preserving cultural heritage sites. This study, exclusively utilizing quantitative methodologies, investigates how community involvement contributes to the tangible maintenance and restoration of these sites and plays a crucial role in protecting intangible cultural heritage elements such as rituals, languages, and traditions [4]. This work analyzes the achievements and challenges faced in Vietnam to provide evidence-based insights into community-centered conservation tactics that are effective and adaptable in various international settings [5].

In summary, this quantitative exploration into the conservation of cultural heritage in Vietnam underscores the irreplaceable influence of local communities in shaping the preservation of our historical heritage. The narrative posits that the identities and everyday realities of the communities occupying these spaces intimately connect with the safeguarding of cultural heritage, providing a sophisticated analysis that bridges the gap between cultural heritage preservation and community empowerment [6]. This study highlights the importance and challenges of leveraging local community involvement and delineates the broader implications for formulating and implementing conservation policies sensitive to the nuances of local contexts.

2. LITERATURE REVIEWS

2.1. A Brief History of Vietnam's Cultural Heritage

Vietnam's cultural heritage, with its deep historical roots and diverse influences, has been the subject of extensive scholarly attention. The literature traces the development of this heritage from the ancient Dong Son culture, renowned for its bronze drum-making techniques around 2000 before the Christian era, through various significant historical epochs to the present day.

Critical studies on the Dong Son culture, such as those by Kim, et al. [7] emphasize its foundational role in Vietnam's cultural evolution, particularly highlighting its advanced metallurgical skills. The subsequent period of Chinese domination, as detailed in research by Nghia [8], was instrumental in introducing Confucianism, Taoism, and Mahayana Buddhism to Vietnam. This era's impact on Vietnamese culture, including significant advancements in agriculture, architecture, and art, is a recurrent theme in the literature.

The emergence of independent Vietnamese dynasties, beginning in the 10th century, marked a significant shift, as explored in-depth by Taylor [9]. This period, particularly under the Ly and Tran dynasties in the history of Vietnam, is noted for its cultural and artistic golden age, giving rise to architectural wonders like the Imperial City of Thang Long and the ancient town of Hoi An, as discussed in the works of Feng [10].

The colonial era, primarily under French influence, introduced new architectural styles and cultural practices, significantly diversifying Vietnam's cultural landscape. Studies by White [11] explore this period's dual impact: the introduction of European influences and the concurrent emphasis on preserving traditional Vietnamese culture as a form of resistance against colonial rule.

In the post-colonial era, especially after the Vietnam War, there has been a renewed emphasis on preserving Vietnam's cultural heritage, both tangible and intangible. Research by Galla [12] highlights this period's efforts to safeguard historical sites, monuments, and traditional practices like music, dance, and festivals. This body of literature highlights the role of government and community initiatives in these preservation endeavors is a focal point in this body of literature.

Regarding specific heritage sites, the literature provides comprehensive analyses. The Complex of Huế Monuments, the Old Quarter of Hoi An, the My Son Sanctuary, the Trang An Landscape Complex, the Citadel of the Ho Dynasty, and Ha Long Bay are extensively studied, as noted in works by Galla [12]. These studies offer

insights into these sites' historical, cultural, and architectural evolution, forming an integral part of Vietnam's cultural heritage.

As examined in recent research, the current state of Vietnam's cultural heritage sites presents a varied picture. While some sites have benefited from focused preservation efforts, others face challenges from environmental degradation, urbanization, and tourism pressures. The literature by Loan [13] underscores the ongoing heritage conservation process in Vietnam, highlighting the need for continuous collaborative efforts involving the government, local communities, and international organizations to preserve these cultural treasures for future generations.

2.2. Conservation of Cultural Heritage Sites

The scholarly investigation into the conservation of cultural heritage sites encompasses a broad spectrum of methodologies aimed at their preservation for future generations. This academic discourse highlights a comprehensive approach to conservation, encompassing preservation, restoration, rehabilitation, and the implementation of protective measures.

As discussed by Heckenberger [14] preservation emphasizes maintaining heritage sites' current conditions to prevent deterioration, advocating for the use of traditional methods to preserve authenticity. Restoration, explored by Parts, et al. [15] focuses on returning sites to their original states, underscoring the importance of detailed historical research and the use of original materials and construction techniques.

As analyzed by Wong and Fernandini [16] rehabilitation involves updating heritage sites for contemporary use while respecting their historical integrity, suggesting a balanced approach to modernization without compromising cultural value. Protective measures, both legal and physical, are crucial for shielding heritage sites from contemporary threats, as detailed by Zhang, et al. [17] who highlight the importance of legal frameworks and physical protections against environmental and urban development challenges.

Documentation and community engagement are also pivotal, with Kohsaka and Rogel [18] emphasizing detailed records for restoration and education and Jacobson, et al. [19] highlighting local communities' crucial role in conservation efforts. As Monroe [20] discusses, public education and awareness are essential for generating public support for conservation efforts.

In summary, the scholarly work advocates for a holistic conservation strategy that combines technical expertise, cultural sensitivity, and community involvement, underscoring the complexity and importance of preserving cultural heritage sites for future appreciation and study.

2.3. The Role of Local Communities in the Conservation of Cultural Heritage Sites

Recent scholarly work has increasingly recognized local communities as vital custodians of traditional knowledge and skills necessary in maintaining and restoring cultural heritage sites. These communities possess a wealth of often undocumented and unique traditional expertise, encompassing a broad spectrum from conventional construction methods to artisan skills and preservation practices. This knowledge is fundamental to ensuring the authentic upkeep of heritage sites.

Kreps [21] delineates the significant role that indigenous construction techniques, preserved and refined within local communities, play in offering sustainable and culturally congruent solutions for heritage conservation. Complementarily, Kreps [21] sheds light on the artisanal prowess inherent in these communities, illustrating how traditional craftsmanship, perpetuated through informal apprenticeship systems, is instrumental in upholding the aesthetic and cultural essence of heritage sites.

Further, Alzayed [22] investigates preservation practices that are unique to specific cultural milieus, revealing how these practices, entrenched in local customs and belief systems, are fundamental to the authenticity and

integrity of heritage sites. Alzayed [22] extends this discourse, examining how traditional preservation methods protect the physical structures and enhance the cultural identity and continuity of communities.

These scholarly contributions collectively argue for integrating local knowledge into standardized heritage conservation strategies, advocating for a collaborative conservation model. This model values and leverages local communities' unique insights and capabilities, ensuring that conservation efforts are technically proficient and culturally attuned [23]. This scholarly dialogue emphasizes the irreplaceable role that local communities, as stewards of traditional knowledge, occupy in conserving our cultural heritage. In light of this evidence, we propose *Hypothesis 1 (H1): Active participation in conservation and maintenance activities significantly and positively impacts the preservation of traditional knowledge among its custodians, underscoring the profound benefits of engaging local communities in the conservation process to safeguard traditional knowledge and cultural heritage effectively.*

Recent academic investigations have highlighted community members' crucial role in actively conserving and maintaining heritage sites. These studies emphasize the direct involvement of local communities in the physical upkeep of these sites, ranging from routine maintenance to complex repairs, often utilizing traditional methods inherited across generations.

In their landmark analysis, Ripp and Rodwell [24] investigate the direct participation of community members in the repair and restoration of heritage structures, revealing that such engagement not only contributes to the tangible preservation of these sites but also fosters an enriched connection between the community and its cultural heritage. Similarly, community-led maintenance initiatives underscore the efficacy of local stewardship in the conservation of heritage, with Ripp and Rodwell [24] emphasizing the essential role of consistent maintenance by community members in preventing the long-term deterioration of these sites.

Chan, et al. [25] provide an in-depth examination of how communities apply traditional techniques to safeguard heritage sites against environmental and anthropogenic threats, illustrating that these community-driven methods are often more sustainable and culturally congruent than modern interventions. Moreover, the research by González, et al. [26] explores the intergenerational transmission of maintenance skills within communities, highlighting the vital role these skills play in preserving heritage sites and acting as a vibrant conduit to the community's historical essence.

Together, these scholarly works illuminate the critical importance of active community participation in conserving and maintaining heritage sites. They call for recognizing and supporting these community-based efforts as a fundamental component of effective and enduring heritage conservation strategies [27]. The literature confirms that local communities' active engagement and inherited expertise deeply ingrain the guardianship of cultural heritage, not just official bodies and experts. Therefore, *Hypothesis 2 (H2) suggests that the processes of cultural preservation and the transmission of traditional knowledge exert a profound and positive impact on the guardians of such knowledge, underscoring the significant effect of cultural stewardship and the dissemination of skills within communities on the maintenance of traditional knowledge.*

The role of local communities in preserving and transmitting intangible cultural heritage related to heritage sites has been a focus of recent academic research. This body of literature emphasizes the importance of rituals, festivals, oral traditions, and languages in maintaining the cultural vibrancy of heritage sites and how local communities are instrumental in keeping these traditions alive for future generations.

Saha, et al. [28] delve into the guardianship role of local communities over intangible heritage, specifically through preserving rituals and festivals. Their research demonstrates that these cultural expressions are not static relics of the past but vibrant traditions that continually evolve, thereby contributing to the identity of heritage sites. Jang and Mennis [29] examine the pivotal role of oral traditions in heritage conservation, illustrating how the narratives and lore recounted by community elders are fundamental to comprehending the context of heritage sites and facilitating the intergenerational transmission of knowledge and cultural values. Angelidou, et al. [30] discuss the critical importance of indigenous languages associated with heritage sites as keystones of cultural identity.

Their investigation brings to light the challenges encountered in preserving these languages amidst globalization and linguistic homogenization pressures. Furthermore, Angelidou, et al. [30] analyze community-led initiatives that facilitate the transmission of cultural heritage to the younger generation, including educational programs and participatory events at heritage sites, ensuring the artistic essence of these locations remains vibrant and pertinent.

This corpus of research collectively accentuates the indispensable role local communities occupy in preserving and transmitting intangible cultural heritage. It calls for the integration and support of community-led initiatives into comprehensive heritage conservation strategies, recognizing that the sustainability of heritage sites is inextricably linked to active participation of the communities committed to maintaining their cultural traditions [31]. Therefore, Hypothesis 3 (H3) suggests that local governance and decision-making processes have a significant and positive impact on the custodians of traditional knowledge, highlighting the importance of empowering local communities to steward their cultural heritage effectively.

The engagement of local communities in the monitoring and reporting activities related to the conservation of heritage sites has emerged as a significant area of focus within contemporary academic research. Notably, Saha, et al. [28] investigate how local communities often serve as the initial observers and reporters of potential threats due to their proximity and profound connection to heritage sites. Their findings underscore the crucial role of early detection by community members in enabling a swift response to various risks, from environmental hazards to illicit construction activities. Similarly, Jang and Mennis [29] examine the structured participation of local communities in the ongoing surveillance of heritage sites. They propose that this form of community-led monitoring is both cost-efficient and yields more precise and trustworthy data, owing to the residents' deep understanding of the local environment and historical nuances. Angelidou, et al. [30] explore how contemporary technological tools can augment the efficacy of local reporting mechanisms. Their research demonstrates that mobile applications and online platforms can significantly facilitate the immediate reporting of issues by community members, thus allowing conservation authorities to take prompt corrective measures. Ondieki [32] delves into the importance of training and capacity building among local communities for efficient monitoring and reporting. This study emphasizes the need to provide community members with the essential skills and knowledge to effectively identify and communicate potential concerns, thereby actively contributing to conservation efforts.

These studies collectively highlight the indispensable role of local communities in the monitoring and reporting processes concerning heritage sites. They argue that community-based observations should be a part of comprehensive conservation strategies. They do this because they know that participation at the local level is key to finding threats early on and keeping cultural heritage sites safe [33]. Therefore:

Hypothesis 4 (H_4) posits that monitoring and reporting activities have a significant and positive influence on custodians of traditional knowledge, emphasizing the beneficial impact of active community involvement in these processes.

Hypothesis 5 (H_5) suggests that the custodians of traditional knowledge exert a significant and positive effect on the custodians of traditional knowledge, highlighting the importance of preserving these sites for the continued transmission and safeguarding of cultural heritage.

Based on the research hypotheses, the following research model is proposed (Figure 1):

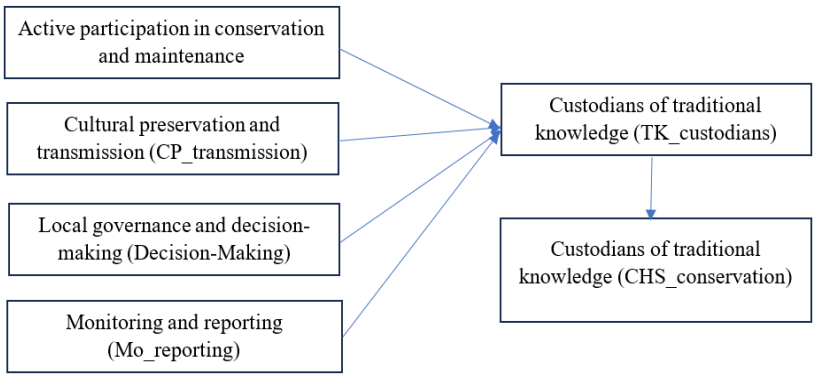

Figure 1. Proposed research model.

3. RESEARCH DESIGN

3.1. Research Population

The participants of this study were adults residing in Hoi An, Hue, and Ha Long - areas renowned for their UNESCO-recognized heritage sites [34]. The deliberate selection of research subjects was closely aligned with the study's aims, emphasizing a targeted and pertinent sample group.

A total of 200 respondents were selected for the study. This sample size was strategically chosen to suit linear multivariate computational analysis, establishing a solid statistical base for the research [35]. A random sampling method was employed to ensure a diverse and representative sample of the population [36].

The data collection was conducted directly by the research team. Participants were asked to complete the questionnaire in pencil, facilitating the immediate collection of responses [37]. This method proved highly effective, yielding a 100% validity rate in the responses collected. The primary survey was conducted in 2013 (Table 1).

Ethical considerations were a cornerstone of this study. Participants were thoroughly briefed about the research's purpose and their rights as participants [38]. Informed consent was obtained from all participants before their involvement in the study. Throughout the research process, the confidentiality and anonymity of the respondents were stringently upheld, ensuring the ethical integrity of the study and adherence to established research standards.

Table 1. Demographic characteristics of survey participants.

		Education					
		Bachelor		High school		Master	
		Count	Row N %	Count	Row N %	Count	Row N %
Age	Over 50 years old	14	60.9%	2	8.7%	7	30.4%
	26 35 years old	28	45.2%	13	21.0%	21	33.9%
	36 50 years old	40	50.0%	15	18.8%	25	31.2%
	6 50 years old	16	45.7%	7	20.0%	12	34.3%
Gender	Female	34	45.3%	10	13.3%	31	41.3%
	Male	64	51.2%	27	21.6%	34	27.2%
Employment status	Full time	28	45.9%	16	26.2%	17	27.9%
	Part time	6	50.0%	1	8.3%	5	41.7%
	Retired	22	53.7%	5	12.2%	14	34.1%
	Self-employed	34	50.0%	9	13.2%	25	36.8%
	Unemployed	8	44.4%	6	33.3%	4	22.2%
Length of residence in the community	6 10 years	25	53.2%	8	17.0%	14	29.8%
	1 5 years	17	38.6%	11	25.0%	16	36.4%
	More than 10 years	56	51.4%	18	16.5%	35	32.1%
Income level	Above average	35	45.5%	14	18.2%	28	36.4%
	Average	43	50.6%	19	22.4%	23	27.1%
	Below average	20	52.6%	4	10.5%	14	36.8%

3.2. Instrument

The instrument utilized in this research, a structured questionnaire, was meticulously developed following an extensive review of relevant literature and consultations with two seasoned experts specializing in cultural heritage research [39]. The questionnaire is methodically divided into two parts: the first section is dedicated to collecting demographic information from respondents (Appendix). In contrast, the second is tailored to gather specific data pertinent to the research objectives [40].

The development process of the questionnaire incorporated a two-step approach [41]. Initially, a pilot survey was conducted with 40 participants, providing valuable insights that facilitated minor yet critical adjustments, ensuring the questionnaire's relevance to the target demographic. After the pilot phase, the questionnaire was refined through expert consultations, enhancing its overall appropriateness and depth for the formal survey [42].

3.3. Validity and Reliability Tests

Cronbach's alpha assesses how closely related survey questions are, indicating their collective measure of a single construct. A high alpha score means the questionnaire is likely reliable, while a low score suggests a need for revision to improve its measurement accuracy. The interpretation of Cronbach's alpha results is somewhat subjective, influenced by research goals, data type, and survey population [43]. Typically, a score above 0.7 signifies acceptable reliability [44], though scores between 0.6 and 0.7 might be adequate for some contexts but suggest potential improvements in question relevance [45]. Scores under 0.6 often indicate a need for more consistency among the questions, requiring possible refinement [46].

Table 2. Summary of reliability.

Scales	Number of variables observed	Reliability coefficients (Cronbach alpha)	Composite reliability (CR)	Average variance extracted (AVE)
Local governance and decision-making	4	0.786	0.786	0.479
Monitoring and reporting	4	0.768	0.768	0.455
Cultural preservation and transmission	4	0.790	0.792	0.488
Cultural preservation and transmission	4	0.763	0.764	0.448
Conservation of cultural heritage sites	4	0.758	0.756	0.439
Custodians of traditional knowledge	4	0.756	0.770	0.459

CR is a measure of the internal consistency of items on a scale, showing how well they collectively assess a single construct [45, 47-52]. It's calculated by comparing the variance of observed scores to the actual score variance, aiming to capture the variance in observed scores attributable to the actual construct, minimizing the impact of measurement error [47, 49, 52-54]. A CR value above 0.70 is typically seen as acceptable, suggesting good internal consistency, though standards may adjust based on research context [44, 48, 50, 51, 53].

AVE evaluates how much variance in the items is explained by their underlying construct, offering a measure of construct reliability through the lens of shared variance among items. It is essential in confirmatory factor analysis (CFA) and SEM, calculated as the mean of the squared correlations between the construct and its

indicators [43, 45]. AVE values range between 0 and 1, with values over 0.5 indicating that a construct explains a significant portion of the variance in its items, denoting satisfactory reliability. However, the threshold for acceptability can vary depending on the research setting [43, 54-58].

Table 2 presents the results of the reliability and validity tests for the research questionnaire [54, 59]. Cronbach's alpha coefficients for all items exceeded 0.7, indicating satisfactory internal consistency and questionnaire reliability [44]. CR, measured for a defined structure with five to eight items, met the minimum threshold of 0.70 [43]. The table reveals that all items have factor loadings greater than 0.7, indicating good convergent validity [54, 59]. The AVE for all items was approximately 0.50, meeting an acceptable threshold for further analysis [43]. These results affirm that the questionnaire items possess satisfactory reliability and validity for analyzing the proposed research model.

3.4. Factor Analysis

Factor analysis, a statistical technique prevalently utilized within the social sciences, facilitates elucidating latent dimensions or factors among a collection of variables. This methodology reduces the dataset's variable count by discerning patterns of inter-correlation present among these variables and subsequently aggregating them into a condensed set of foundational factors [60]. Determining the quantity of factors to be extracted typically relies on analyzing scree plots and eigenvalues [61]. The outcomes derived from factor analysis are instrumental in refining research queries, hypotheses, and theoretical models [45], offering profound insights into the principal factors that elucidate the relationships observed within the dataset [62].

Table 3. Result of factor analysis.

Rotated component matrix						
Items	**Component**					
	1	**2**	**3**	**4**	**5**	**6**
Mo_reporting1	0.801					
Mo_reporting4	0.757					
Mo_reporting2	0.676					
Mo_reporting3	0.579					
Ac_maintenance3		0.764				
Ac_maintenance4		0.724				
Ac_maintenance1		0.719				
Ac_maintenance2		0.654				
CP_transmission3			0.719			
CP_transmission2			0.699			
CP_transmission1			0.698			
CP_transmission4			0.631			
CHS_conservation1				0.788		
CHS_conservation3				0.669		
CHS_conservation4				0.665		
CHS_conservation2				0.656		
Decision_making1					0.743	
Decision_making2					0.698	
Decision_making3					0.665	
Decision_making4					0.641	
TK_custodians2						0.725
TK_custodians1						0.714
TK_custodians3						0.590
TK_custodians4						0.582
Extraction method: Principal component analysis. Rotation method: Varimax with Kaiser normalization.						
Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) = 0.874 Bartlett's test of Sphericity (Chi-square = 1441.554; df = 276; sig.=0.000) Extraction sums of squared loadings = 58.360; Initial eigenvalues =1.102						

Table 3 presents the factor analysis results conducted to validate the research questionnaire. Bartlett's test of sphericity was statistically significant (Sig. = 0.000), and KMO = 0.891 (>0.5), indicating that the observed variables are correlated in the population and are, therefore, suitable for factor analysis. The factor loading coefficients for all variables >= 0.5 indicate the validity of the factor analysis. The criterion for the practical significance of factor loading is a minimum level = 0.3, an essential level = 0.4, and a practical level = 0.5. Table 3 shows that all variables have factor loading coefficients >= 0.5, demonstrating the validity of the factor analysis. The total load squared extraction for the six factors = 57.635% (>50%), indicating that the extracted factors can explain significant variance in the data. The initial eigenvalue of the six factors = 1.128 (> 1.00), indicating that the extracted factors have eigenvalues more significant than one and are, therefore, valid. These results demonstrate the suitability and validity of exploratory factor analysis for the proposed research model [54, 63].

3.5. Structural Equation Modeling

SEM represents a sophisticated statistical approach extensively employed in the social sciences for examining the interrelations among variables within intricate systems [64]. This method integrates elements of regression analysis, factor analysis, and causal modeling, positioning it as a multifaceted tool for multivariate analysis [55]. SEM operationalizes through the formulation of a series of equations that articulate the interconnections among system variables [65] allowing for the quantification of the strength and directionality of these relationships as well as the extent to which latent factors underpin these associations [45].

A critical advantage of SEM lies in its predictive capability, wherein it can forecast variations in one variable as a function of alterations in other variables within the system [43]. This methodological framework is adept at testing theoretical propositions concerning the dynamics between concepts and variables [66], facilitating the examination of complex hypotheses regarding variable interrelations within a given system. Jöreskog and Sörbom [67] have demonstrated that SEM's outcomes can provide valuable insights into the operative mechanisms within complex systems, thereby informing the development of theoretical models and frameworks pertinent to these systems. SEM is also very useful for finding direct and indirect effects, as well as mediating effects between variables, which helps us understand how the different parts of the system work together in more detail [68].

Table 4. Regression weights.

The relationship between the independent variable and the dependent variable	Estimate	S.E.	C.R.	P	Result
TK_custodians. <--- Mo_reporting	0.198	0.090	2.200	0.028	Accepted
TK_custodians. <--- Ac_maintenance	0.152	0.069	2.212	0.027	Accepted
TK_custodians. <--- CP_transmission	0.195	0.074	2.626	0.009	Accepted
TK_custodians. <--- Decision_making	0.193	0.078	2.464	0.014	Accepted
CHS_conservation. <--- TK_custodians	1.082	0.187	5.779	***	Accepted

Note: ***p<0.01.

To evaluate the goodness of fit of SEM, several fit indices were utilized, including the Chi-Square ($\chi 2$) test, Root-Mean-Square Error of Approximation (RMSEA), standardized-root-mean square residual (SRMR), Tucker-Lewis Index (TLI), and Comparative Fit Index (CFI). A well-fitted model should have CFI, TLI >= 0.900, and RMSEA<= 0.08. The analysis results, as shown in Figure 2, indicate that the SEM model satisfies the standard requirements. The Chi-square statistic is 301.350 with 241 degrees of freedom (p.value = 0.000, < 0.05), Chi-square/df ratio of 1.250, Goodness of Fit Index (GIF) = 0.888 (approximately equal to 0.9), TLI = 0.956, and RMSEA =0.035. The results of the SEM analysis are presented in Table 4, which shows the relationship between the variables. Overall, the results suggest that the SEM model fits well with the data and represents the proposed research model well.

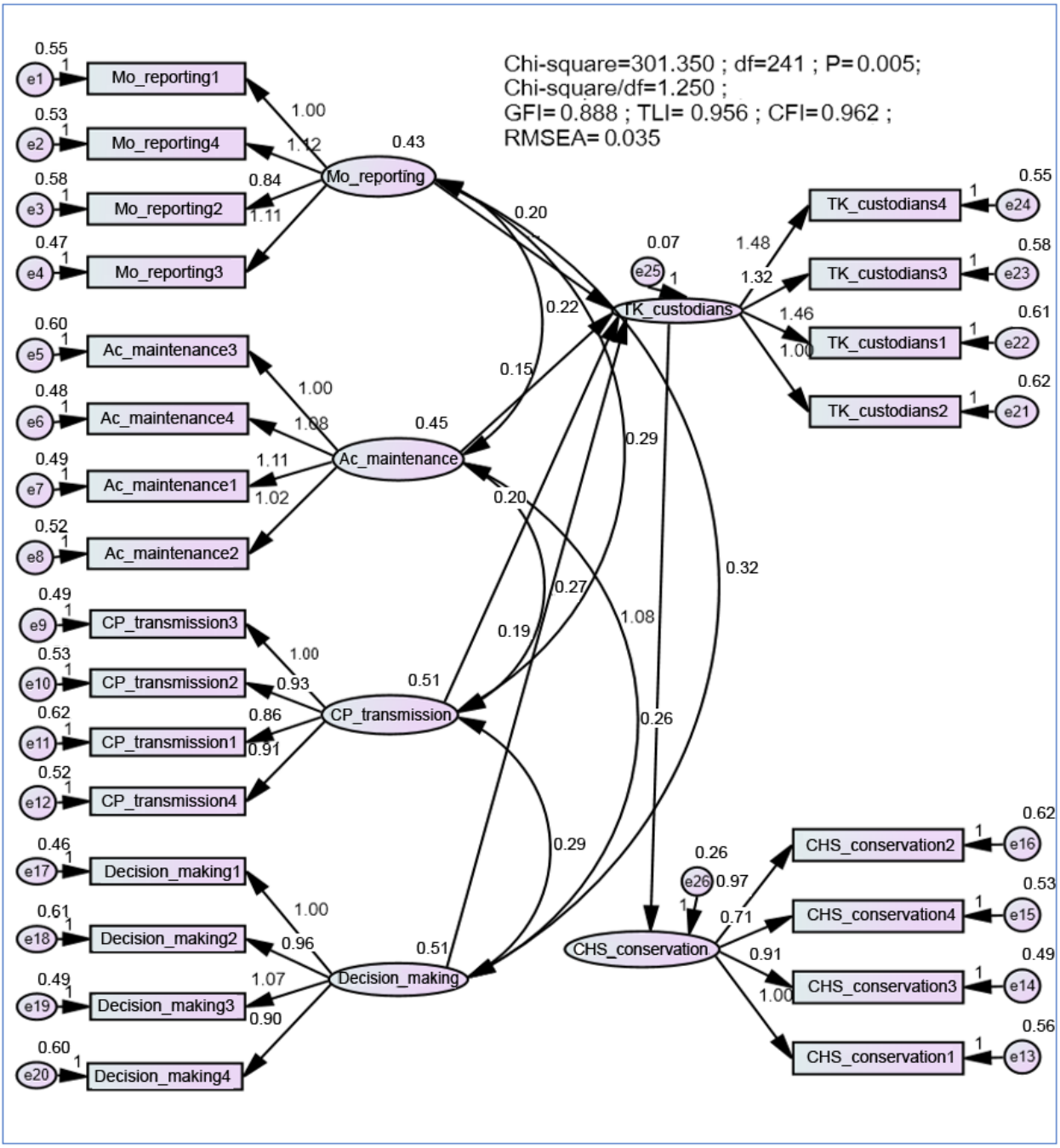

Figure 2. SEM analysis results.

4. RESULTS AND DISCUSSION

4.1. Results

The analysis conducted using SEM, detailed in Table 4, offers insightful revelations into the dynamics between various elements and their consequential impact on the custodians of traditional knowledge within the context of cultural heritage conservation in Vietnam. The analysis delineates significant positive correlations along the hypothesized pathways.

A critical finding of this study is the substantial influence that active participation in conservation and maintenance exerts on the custodians of traditional knowledge. This is quantitatively supported by a regression coefficient (β) of 0.152, with statistical significance established at a 95% confidence level (p = 0.027). Thus, H1 is validated.

Similarly, the role of cultural preservation and transmission in influencing traditional knowledge custodians is positively significant. This is demonstrated by a regression coefficient of 0.195 and a p-value of 0.009, confirming H2. Additionally, the domain of local governance and decision-making is shown to have a positively meaningful effect on traditional knowledge custodians, as evidenced by a regression coefficient of 0.193 and a p-value of 0.014, leading to the endorsement of H3.

Furthermore, the SEM analysis uncovers that monitoring and reporting practices positively and significantly impact the custodians of traditional knowledge, as indicated by a regression coefficient of 0.198 and a p-value of 0.028, affirming H4. Most notably, the conservation of cultural heritage sites is found to have a profoundly positive impact on traditional knowledge custodians, with a strikingly high regression coefficient of 1.082 and a p-value of less than 0.001. This compelling evidence supports the acceptance of H5.

In summary, the outcomes of the SEM analysis robustly corroborate the stipulated hypotheses, underscoring the pivotal roles played by active community participation, cultural preservation, local governance, monitoring, and conservation efforts. These elements are instrumental in fostering and preserving the knowledge and practices of traditional knowledge custodians, an aspect critical to the sustainable conservation of cultural heritage sites in Vietnam.

4.2. Discussion

This study explores the critical role of local communities in preserving cultural heritage sites in Vietnam, elucidating their multifaceted contributions to heritage conservation. It demonstrates that community involvement encompasses active participation, cultural preservation, local governance, and monitoring, contributing to a comprehensive conservation strategy [69]. A principal discovery of this study is the significant influence of active community engagement. This engagement transcends physical upkeep, embodying the cultivation and reinforcement of traditional knowledge crucial for heritage conservation [23]. Preserving tangible and intangible cultural elements by local communities enhances the conservation process, rendering it more profound and sustainable [70]. The research further underscores the essential role of cultural preservation and transmission in maintaining the vitality and relevance of heritage sites. It posits that intangible cultural aspects, such as rituals, festivals, and oral traditions, are foundational to the conservation effort and vital for ensuring heritage sites remain vibrant and culturally resonant [25].

The involvement of local communities in governance and decision-making processes is a key component of effective heritage conservation [26]. Such involvement promotes a sense of ownership and ensures conservation strategies align with cultural values, leading to sustainable and culturally congruent conservation outcomes [25].

Additionally, the study reveals the importance of community-led monitoring and reporting in conserving heritage sites [16]. This proactive community engagement is crucial for early threat detection, facilitating timely and efficient conservation actions to protect heritage sites from various risks [29].

The findings underscore the need for an integrative conservation approach encompassing all preservation facets to effectively maintain cultural heritage sites [28]. Such a holistic strategy is critical to enhancing traditional knowledge stewardship and conservation efforts' overall success [32].

The study advocates for the development of policies and conservation initiatives that actively involve local communities [24], enhancing the effectiveness of these efforts and preserving the cultural essence of heritage sites, thereby fostering a more inclusive and community-focused approach to heritage conservation [29].

While providing valuable insights, the study's focus on the Vietnamese context may limit its generalizability [71]. Predominantly utilizing quantitative methodologies, future research could benefit from incorporating qualitative analyses for a deeper exploration [72]. Investigating community involvement in heritage conservation across diverse cultural and geographical contexts could offer a broader perspective on community roles in this field [30]. In summary, this research emphasizes local communities' indispensable role in conserving cultural heritage

sites. A community-centric conservation approach ensures the physical upkeep of these sites and protects their intangible cultural heritage, which is crucial for their sustained preservation and relevance.

5. CONCLUSIONS

This study offers a sophisticated exploration of the complex roles that local communities play in heritage conservation, as outlined by Nasrolahi [70]. Our investigation reveals community engagement's profound influence across various dimensions of preservation, encompassing active participation, cultural conservation, governance, and oversight. Asri and Harun [73] pointed out, the results clearly show that local communities are not just passive recipients of conservation efforts. Instead, they are key players whose participation is necessary to protect both the tangible and intangible parts of cultural heritage. The enhancement of traditional knowledge, the transmission of cultural values, and the sustenance of practices and rituals are all significantly bolstered by vigorous community involvement. This participation ensures that conservation endeavors go beyond the mere maintenance of structures to embrace the preservation of the essence of cultural heritage.

Additionally, this study underscores the critical importance of local governance and decision-making processes in tailoring conservation strategies to suit community preferences and cultural nuances, as discussed by Bhatta, et al. [74]. It also underscores the significance of community-led monitoring and reporting mechanisms in safeguarding heritage sites against potential threats and degradation, as evidenced by Saha, et al. [28]. These elements play a vital role in fostering sustainable and efficacious conservation methodologies.

Despite its contributions, the study's primary limitation lies in its geographical focus on Vietnam, potentially limiting the applicability of its findings to other contexts. Moreover, the predominance of quantitative data indicates the necessity for future research endeavors to incorporate qualitative methodologies. Such approaches would offer a more holistic perspective on communities' roles in heritage conservation across diverse cultural landscapes. In summary, this research calls for a fundamental transformation in the approach to heritage conservation, one that acknowledges and integrates the indispensable contributions of local communities. By adopting a more inclusive and participatory methodology, conservation efforts can be markedly improved, ensuring the preservation of cultural heritage sites and the perpetuation of the living traditions they embody. This study significantly enriches the ongoing discourse on heritage conservation, advocating for strategies that honor and utilize local communities' invaluable knowledge and competencies. This, in turn, promises the sustainable preservation of our collective cultural heritage.

Future research directions should focus on expanding the geographical scope of studies to include diverse cultural settings, thereby enhancing the generalizability of findings. Additionally, incorporating qualitative research methods could provide deeper insights into how communities engage with heritage conservation. Exploring the impacts of digital technologies on community participation and heritage preservation and the potential for cross-cultural collaborations in conservation efforts also represents fertile ground for further investigation. These avenues would address the limitations identified in this study and contribute to a more nuanced understanding of global heritage conservation practices.

Funding: This study received no specific financial support.
Institutional Review Board Statement: The Ethical Committee of the Ministry of Culture, Sports and Tourism, Vietnam has granted approval for this study on 20 December 2022 (Ref. No. 3325/QĐ-BVHTTDL).
Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: Conception and design of the study, N.N.T.; read and agreed to the published version of the manuscript, N.D.T. Both authors have read and agreed to the published version of the manuscript.

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Appendix

QUESTIONNAIRE

Your profile: Please select ONE answer from each statement that best describes you

Age:.....

Gender:.....

Education Level:

☐ Secondary education / High school

☐ Vocational/Technical training

☐ Bachelor's degree

☐ Master's degree

☐ Doctorate

Employment Status:.....

Length of Residence in the Community (if applicable):

☐ 1-5 years

☐ 6-10 years

☐ 11-20 years

☐ More than 20 years

Income Level:

☐ Below average

☐ Average

☐ Above average

The purpose of this survey is to identify the role of local communities in the conservation of cultural heritage sites. On this scale, there is no correct or incorrect response. Please read each statement carefully and indicate your level of agreement using a 5-point Likert scale, where 1 corresponds to "Strongly Disagree" and 5 corresponds to "Strongly Agree."

CHS_conservation	**Conservation of cultural heritage sites**					
CHS_conservation1	Conserving cultural heritage sites is crucial for preserving our history and identity.	1	2	3	4	5
CHS_conservation2	I feel that adequate measures are being taken to preserve cultural heritage sites in my community.	1	2	3	4	5
CHS_conservation3	My community is sufficiently aware of the importance of conserving cultural heritage sites.	1	2	3	4	5
CHS_conservation4	I am satisfied with my area's condition and upkeep of cultural heritage sites.	1	2	3	4	5
TK_custodians	Custodians of traditional knowledge					
TK_custodians1	Traditional knowledge in my community is effectively used to keep cultural heritage sites.	1	2	3	4	5
TK_custodians2	Elders and knowledgeable individuals in my community actively pass down traditional practices related to heritage conservation.	1	2	3	4	5
TK_custodians3	Traditional methods are preferable to modern ones in my community's maintenance and restoration of heritage sites.	1	2	3	4	5
TK_custodians4	My community has a rich repository of traditional knowledge and skills contributing to heritage conservation.	1	2	3	4	5
Ac_maintenance	Active participation in conservation and maintenance					
Ac_maintenance1	Members of my community actively participate in cleaning, repairing, and maintaining local heritage sites.	1	2	3	4	5
Ac_maintenance2	I involve myself in activities related to the conservation of heritage sites.	1	2	3	4	5
Ac_maintenance3	There are ample opportunities for community members to contribute to conserving heritage sites.	1	2	3	4	5
Ac_maintenance4	The active involvement of the community significantly improves the state of heritage sites.	1	2	3	4	5
CP_transmission	Cultural preservation and transmission					
CP_transmission1	My community regularly practices and celebrates cultural traditions and rituals associated with heritage sites.	1	2	3	4	5
CP_transmission2	Younger generations in my community are taught the significance of our cultural heritage.	1	2	3	4	5
CP_transmission3	The cultural aspects of our heritage sites (Like festivals, languages, and traditions) are being preserved effectively.	1	2	3	4	5
CP_transmission4	There are mechanisms in place to ensure the transmission of cultural heritage to future generations.	1	2	3	4	5
Decision-making	Local governance and decision-making					
Decision-making1	Local authorities effectively involve community members in	1	2	3	4	5

CHS_conservation	Conservation of cultural heritage sites					
	decision-making processes related to heritage conservation.					
Decision-making2	Community members have a sense of ownership and responsibility towards local heritage sites.	1	2	3	4	5
Decision-making3	Decisions regarding heritage sites are transparent and reflect the community's interests.	1	2	3	4	5
Decision-making4	Local leaders are proactive and effective in managing and protecting heritage sites.	1	2	3	4	5
Mo_reporting	Monitoring and reporting					
Mo_reporting1	Community members vigilantly monitor the condition of heritage sites and report any issues.	1	2	3	4	5
Mo_reporting2	A system is in place for community members to report damages or threats to heritage sites.	1	2	3	4	5
Mo_reporting3	Relevant authorities promptly address reports and concerns from the community about heritage sites.	1	2	3	4	5
Mo_reporting4	Regular monitoring by community members helps in the early detection and prevention of potential damage to heritage sites.	1	2	3	4	5