



## Cultural Heritage Management as a Strategy for Local Development in the District of La Jalca, Amazonas

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### ABSTRACT

The management of cultural heritage by conserving and promoting its tangible elements seeks to integrate conservation with socioeconomic benefits, thus strengthening social cohesion. The main objective of this study was to analyze how cultural heritage management contributes as a strategy to local development in the district of La Jalca, Peru. An ordered logistic model (ologit) was applied to surveys of fifty villagers, and variables such as education, conservation, financing, and participation were evaluated. The results show that level of education, active conservation, and resource allocation all significantly increased the valuation of heritage, while age had no relevant impact. It is concluded that effective management requires inclusive cultural education, sustainable financing, and qualitative participation, through the adaptation of international experiences to the context of the region, with emphasis on integrating elements of intangible heritage and articulated policies for balanced development.

### KEYWORDS

Heritage management; local development; education; conservation; heritage.

## INTRODUCTION

Cultural heritage management has become a highly relevant strategy for local development, especially in communities where this heritage forms the basis of identity and sustainability. This strategy is carried out by integrating the conservation of the cultural legacy with economic, social, and environmental benefits. Several studies show that participatory and sustainable models of heritage management not only preserve collective identity but also boost local economies, strengthen social cohesion, and improve the quality of life of communities (Castro, 2020; Páez, 2022).

In academia, cultural heritage management has been addressed from multiple approaches. Authors such as Castro (2020) highlight the importance of municipal development strategies for heritage conservation, while Páez (2022) highlights their potential to promote sustainable tourism in rural communities. Likewise, studies such as those by Toselli (2019) and Ledesma (2019) evidence the need for formal mechanisms to register and promote heritage, and the importance of adapting management strategies to local realities.

Cultural tourism emerges as one of the main economic drivers in regions with significant heritage, generating visitor flows, direct and indirect income, and employment opportunities (Chong & Balasingam, 2019). There is evidence that rural communities with active heritage management experience multiplier effects in sectors such as crafts, gastronomy, and services, thus contributing to economic diversification (Burnham, 2022). Beyond its economic value, heritage strengthens the social fabric by fostering collective identity and a sense of belonging (Hidalgo-Sánchez et al., 2022). Educational and recreational programs linked to heritage, such as tradition workshops or interpretive routes, preserve ancestral knowledge, promote inclusion and intergenerational dialogue (Guerra et al., 2020; Nowacki, 2021).

The active involvement of local communities, public institutions, academics, and the private sector is necessary for effective management (Spennemann, 2024). Additionally, strategies that combine tourism, environmental, and social indicators allow for pragmatic and contextualized conservation (Vinodan & Meera, 2022). On the other hand, the reuse of historic buildings (e.g., conversion of these buildings into cultural centers or community spaces) preserves their material value. It revitalizes urban and rural environments (Burnham, 2022).

The creation of interpretive programs facilitates the appreciation of heritage by visitors and residents while managing negative impacts such as tourist saturation (UNESCO, 2024). Initiatives such as those described by Cortés (2021) in South America demonstrate how heritage education can be a tool for sustainable development. Despite advances, many management plans lack a comprehensive vision, limiting themselves to isolated actions without articulation of urban or environmental policies (Deacon, 2018). In addition, the conceptualization of intangible heritage (e.g., rituals, traditional knowledge, or heritage language experiences) remains a challenge in regulatory frameworks and practical projects (Kirkegaard, 2020; Kuzembayeva et al., 2024).

Dependence on public resources and a lack of innovation in funding models, such as public-private partnerships or community funds, hinder the sustainability of initiatives by artists, musicians, technicians, and other professionals (Li et al., 2020; Yende, 2024). Likewise, collaborative governance requires further strengthening to overcome conflicts of interest among actors (Vargas & Esquivel, 2023).

Although numerous studies have demonstrated the importance of cultural heritage management for strengthening identity, promoting sustainable tourism, and fostering local economies, there is a lack of research that addresses how these strategies operate in small rural districts with limited institutional capacities and scarce resources. This gap highlights the need for an empirical analysis that connects global and national approaches to the specific conditions of La Jalca. The present study, therefore, examines how cultural heritage management has contributed as a strategy to local development in this district. It focuses on the intersection of conservation, education, financing, and community engagement in a context where heritage management has not yet been systematically studied.

In the district of La Jalca, located in the Amazonas region within Peru, this approach takes on relevance due to the tangible and intangible cultural wealth of the area. However, the preservation and promotion of this heritage face challenges, such as the lack of official records, limited resources, and the need for greater community participation. Therefore, this study seeks to analyze how the management of cultural heritage can be an effective tool to promote local development in La Jalca, integrating economic, social, and environmental perspectives. In the face of these challenges, innovative proposals emerge that aim to balance conservation and development. Examples such as those of Chheda et al. (2024) highlight strategies for lesser-known heritage sites, where integrated management (e.g., applying digital or community-based tourism approaches) ensures their preservation without sacrificing economic opportunities. Sustainability, in this sense, depends on policies that prioritize public participation, adaptability, and resilience in the face of global changes (Mariscal, 2022).

### **LITERATURE REVIEW**

The management of cultural heritage has been widely studied from various perspectives, reflecting its relevance for local development, sustainability, and community identity. This includes analyzing different approaches and strategies to enhance its conservation, promotion, and use for the benefit of communities. Moreover, the importance of intangible cultural heritage (ICH) has been recognized by UNESCO since 2003 (Tavares et al., 2021).

In Cuba, the importance of integrating municipal development strategies as the main tool for managing cultural heritage at the local level based on a reflective analysis of the Cuban context has been highlighted, proving to be decisive in encouraging multidimensional development, mitigating negative impacts, and fostering community participation (Castro, 2020). Similarly, Páez (2022) researchers evaluated how cultural heritage management serves

as an effective strategy to promote sustainable tourism in rural mining communities, contributing to economic, social, and environmental development.

In the field of cultural tourism, Toselli (2019) evaluated the potential of rural villages in Argentina, highlighting that, although they possess valuable tangible and intangible heritage, they lack an official registry to facilitate their conservation and promotion. Likewise, Ledesma (2019) proposed a tourism management plan in Cuba, which has founded its heritage wealth and its capacity to become a tourist destination that benefits the local economy and heritage preservation. The decentralization of heritage management in Chile has also been the subject of analysis. The need to empower municipalities to lead preservation processes adapted to local realities allows for more participatory management, strengthens community identity, and leads to sustainable development (Salgado et al., 2020). In the case of Ecuador, the evolution of local development with a decentralized and participatory approach is more focused on sustainability and community strengthening (Vargas & Esquive, 2023).

Cultural tourism is a powerful tool for local development, as it can attract investment, generate employment, and improve local infrastructure (Spennemann, 2023). However, it is important to ensure that tourism management is sustainable to avoid negative impacts, such as pollution or inequality in the distribution of economic benefits (Espinoza et al., 2025). The implementation of community development programs, like those carried out in local museums in Peru, can foster active community participation and strengthen cultural identity.

The relationship between design and heritage has been addressed to determine how social design has contributed to the management of cultural heritage through communication tools and the creation of meaningful experiences (Torres, 2022). Also, the growth in professional training and research on heritage management demonstrates the impact on academic diversification and sustainability (Mariscal, 2022). Regarding a legal perspective, López et al. (2020) examined the protection of cultural heritage, identifying a solid legal framework, albeit with challenges related to limited resources and inter-institutional coordination. The design of cultural management strategies integrates strategic planning as a main tool to strengthen cultural development (Orozco & Bustamante, 2021).

Strategies based on the idea that conservation and enhancement of cultural heritage is both a moral duty and a strategy to support the evolution and economic performance of local communities (Camagni et al., 2020). This holistic perspective allows cultural heritage to act as a driver of local development beyond its mere touristic exploitation. The inclusion of the community in the identification, nomination, and co-evaluation of heritage assets ensures that conservation policies reflect local values and priorities (Panagiotopoulou et al., 2017).

The tourism and cultural dimensions of how marketing strategies can energize military cultural heritage, promote their conservation, and attract visitors (Fernandez, 2019). In parallel, Amat (2020) indicates how historical interpretations influence heritage management, proposing an inclusive approach that combines conservation and contemporary adaptation. Finally, the

relevance of local development is a strategy to enhance community resources and combat unemployment (Almaguer et al., 2021; Macías et al., 2022).

Early heritage management in Peru focused on monument conservation, often excluding local communities (Ocaña, 2023). Some projects marked a paradigm shift by integrating community consultation, collaboration, and benefits sharing into official regulations, moving towards ethical commitments and participatory governance (Chinen, 2022; Chuspe et al., 2023; Uribe-Chinen, 2024)

The use of emerging technologies, such as artificial intelligence, virtual reality, and augmented reality, can enhance the preservation and revitalization of cultural heritage (Elrawy, 2025). These technologies can offer new forms of interaction with heritage, both for residents and visitors, and can serve as an effective tool for education and cultural promotion (Pozzi-Escot & Uceda, 2019).

The objectives of the study were to analyze how cultural heritage management contributes as a strategy to local development, while diagnosing the state of cultural heritage management and local development in the district of La Jalca, Amazonas. The study aimed to identify strengths, weaknesses, and opportunities in the existing practices and policies with the purpose of providing a comprehensive assessment that would allow for the formulation of recommendations to strengthen the link between heritage preservation and sustainable local progress. The central research question guiding this study was: How does cultural heritage management contribute as a strategy to local development in the district of La Jalca, Amazonas in terms of strengths, weaknesses, and opportunities within existing practices and policies?

## METHODOLOGY

### Design

The study employed an ordered logistic model (ologit) to evaluate the factors that influenced the perception of cultural heritage preservation among the inhabitants of La Jalca. The ordered logit model, also referred to as proportional odds logistic regression, is an ordinal regression model designed for dependent variables measured on an ordinal scale. This type of model is commonly used to estimate the relationship between an ordinal dependent variable and a set of independent variables. In this research, it was applied to analyze factors such as educational level (Aas et al., 2005; De Luca et al., 2021), participation in cultural activities, and allocation of financial resources (Poulios, 2014; Heras et al., 2019), with the purpose of determining their impact on heritage valuation. The research is based on the following econometric premise:

$$P(Y \leq j | X) = \frac{1}{1 + e^{-(T_j - \beta_0 - \sum_{i=1}^k \beta_i X_i)}}$$

Where:

$P(Y \leq j | X)$  = Cumulative probability of being in category  $j$  or lower of the dependent variable.

$T_j$  = Cut-off points for category  $j$ .

$\beta_0$  = Intercept

$\beta_i$  = Coefficient of variable  $X_i$ .

$X_i$  = Value of the independent variable  $i$ .

The specific function of the ologit model used in the research is described below with the model components:

$$P(Y \leq j | X) = \frac{1}{1 + e^{-(T_j - \beta_1 A_i - \beta_2 E d_i - \beta_3 C1_i - \beta_4 C2_i - \beta_5 P_i - \beta_6 F_i - \beta_7 E C_i - \beta_8 S1_i - \beta_9 S2_i - \beta_{10} E1_i - \beta_{11} E2_i - \beta_{12} E2_i)}}$$

$T_j$  is the cut-off point that divides the categories presented in Table 1.

**Table 1.**

*Flow of hypotheses assessed in the research.*

Independent variables		Analytical model	Dependent variable
Age (A)	Knowledge of projects that generated employment (Ec)	Ordered Logit Model (Proportional Odds Logistic Regression)	Perception of cultural heritage preservation (Y)
Education (Ed)	Knowledge of programs that promote heritage conservation (S1)		
Conservation of cultural elements (C1)	Participation in cultural activities (S2)		
Efforts in the conservation of cultural heritage (C2)	Implementation of environmental conservation projects (E1)		
Effectiveness in the promotion of cultural events (P)	Environmental education actions to conserve cultural heritage (E2)		
Allocation of financial resources for cultural heritage management (F)	Consideration of infrastructure projects in the protection of cultural heritage (E3)		

*Note.* Each independent variable was formulated as a research hypothesis regarding its potential effect on the dependent variable.

The research was complemented by applying marginal effects to the ordered logistic model, with the intention of capturing the average change in the probability of the dependent variable being in category 2 (the level designated as the threshold for acceptance of good heritage conservation) because of a unit change in an independent variable. That is, the general equation is expressed as follows:

$$\frac{\partial P(Y = 2 | X)}{\partial X_i} = f(\tau_2 - \beta'X) \cdot \beta_i - f(\tau_1 - \beta'X) \cdot \beta_i$$

In the above equation,  $\tau_2$  is the upper cut-off point for category 2 and  $\tau_1$  the lower point.  $\beta'X$  is the linear combination of the coefficients  $\beta$  and the values of the independent variables  $X$  and  $f(z)$  is characterized by being the density of the logistic function, being  $f(z) = \frac{e^{-z}}{(1+e^{-z})^2}$ .

Replacing the independent variables, the equation for the marginal effects on outcome 2 is expressed as follows:

$$\frac{\partial P(Y = 2|X)}{\partial X_i} = f(\tau_2 - (\beta_1 A + \beta_2 Ed + \dots + \beta_{12} E2)) \cdot \beta_i \\ - f(\tau_1 - (\beta_1 A + \beta_2 Ed + \dots + \beta_{12} E2)) \cdot \beta_1$$

### Sample

The sample of the study consisted of 50 inhabitants of the district of the La Jalca Grande, a province of Chachapoyas in the Amazonas region of Peru. The participants were adults over 18 years of age who resided permanently in the district. A convenience sampling method was applied, which allowed the selection of respondents representing different age groups, genders, and educational backgrounds, ensuring heterogeneity in the data obtained.

### Instrument

**Table 2.**

*Description of variables*

Variable	Description
Y	Ordinal categorical variable. It measures the arithmetic average level of heritage preservation perceived by the inhabitants of the district.
A	Variable categorized by age ranges, transformed to logarithms.
Ed	Ordinal categorical variable that classifies individuals according to their degree of educational background.
C1	Ordinal variable. Measures respondents' level of agreement with the state of conservation of cultural elements (historic buildings, traditions).
C2	Ordinal variable. It evaluates the perception of cultural heritage preservation efforts.
P	Ordinal variable. Reflects levels of perception of the effectiveness of cultural activities.
F	Ordinal variable. It captures the levels of perception about the allocation of financial resources for cultural heritage management.
Ec	Nominal variable. Classifies respondents according to their knowledge of cultural projects that generated employment by transforming it into a dichotomous variable.
S1	Nominal variable. Transformed to dummy for those who have knowledge of programs that promote cultural heritage conservation = 1.
S2	Ordinal variable. Reflects frequency of participation in some cultural activity related to the district's heritage.
E1	Nominal categorical variable. Measures knowledge about the implementation of projects related to the protection of cultural heritage.
E2	Nominal categorical variable. Measures knowledge of actions to educate the community about the importance of protecting cultural heritage.
E3	Ordinal categorical variable. Reflects the perceived frequency of local infrastructure projects that have considered the protection of cultural heritage.

The instrument used in the study was a structured questionnaire composed of 18 items. The items were organized into three main sections: demographic characteristics (age, gender, and educational level), perceptions of cultural heritage preservation, and dimensions related to sustainable development (economic, social, and environmental). All questions were designed using a nominal and ordinal scale, which facilitated the analysis of perceptions and knowledge levels regarding cultural heritage management and local development.

### **Instrument validation**

The questionnaire was subjected to a process of validation by a panel of three experts who specialized in archaeology, administration, and economics. Their assessment focused on the relevance, clarity, and consistency of the items in relation to the study objectives. Based on their feedback, minor adjustments were made to improve the precision of the questions. The internal consistency of the instrument was subsequently verified through Cronbach's Alpha, which reached a coefficient of 0.803, indicating a satisfactory level of reliability.

### **Data collection**

The data collection was conducted in August 2024 through face-to-face surveys administered directly by the research team. The process took place in community meeting spaces, where participants responded individually to the printed questionnaires. On average, each survey required approximately 15 minutes to complete. Prior to responding, the participants were informed about the purpose of the study and voluntarily provided their informed consent. Ethical principles of confidentiality and anonymity were strictly observed throughout the data collection process.

### **Data analysis**

The data obtained from the surveys were organized and coded in a database for their subsequent process using Stata software, ensuring accuracy and reliability in the processing of the information. First, a descriptive statistical analysis was conducted to summarize the demographic characteristics of the respondents and to examine the distribution of their perceptions regarding cultural heritage management and local development. Measures of central tendency and dispersion were applied to explore the variability of responses across categories of education, age, and other independent variables.

Subsequently, an econometric analysis was conducted using an ordered logistic regression model (ologit) to determine the factors that significantly influenced the perception of cultural heritage preservation. This method was selected because the dependent variable was ordinal in nature, allowing the identification of the probability of belonging to higher categories of perception as a function of independent variables such as education, conservation, financing, participation, and environmental initiatives.

To better contextualize the uncertainty associated with our limited sample size, we conducted additional analyses using 90% confidence intervals rather than conventional 95% intervals. This approach provides a more appropriate balance between Type I and Type II error rates given the statistical power constraints. We also performed a post-hoc power analysis,

which revealed that our study had approximately 65% power to detect medium effect sizes ( $w = 0.3$ ) at  $\alpha = 0.05$ , reinforcing the need for cautious interpretation of marginally significant results.

In addition, marginal effects were estimated to capture the average change in the probability of perceiving heritage preservation at an acceptable level when a unit change occurred in the independent variables, holding the other factors constant. Finally, the results of these analyses provided both statistical significance and substantive interpretation of the role of education, conservation efforts, financial resources, and participation in shaping community perceptions of cultural heritage management.

## RESULTS

Table 3 presents the descriptive demographic data with respect to age, a balanced sample with 32% of participants between 18 and 30 years, 34% between 31 and 50 years, and 34% over 50 years of age. In terms of gender, men represented a slightly higher proportion of the sample (52%) compared to women (48%). Regarding the length of residence in La Jalca, most respondents had lived in the district for less than one year (32%) or between six and ten years (32%), while 16% reported a residence between one and five years, and 20% had resided in the district for more than ten years. Concerning education, the largest groups were individuals with complete primary education (34%) and incomplete secondary education (34%), followed by complete secondary education (28%). Only 2% reported incomplete primary education, and another 2% had attained higher education.

**Table 3.**

### *Descriptive demographic data*

Variable	Proportion	Std. Err.	Variable	Proportion	Std. Err.
<i>Age</i>			<i>Gender</i>		
18 -30 years	0.32	0.065	Male	0.52	0.070
31 -50 years	0.34	0.066	Female	0.48	0.071
> 50 years	0.34	0.066	<i>Education level</i>		
<i>Length of residence in La Jalca</i>			Incomplete primary	0.02	0.019
< 1 year	0.32	0.065	Complete primary	0.34	0.066
1 – 5 years	0.16	0.051	Incomplete secondary	0.34	0.066
6 – 10 years	0.32	0.065	Complete secondary	0.28	0.063
> 10 years	0.20	0.056	Higher education	0.02	0.019

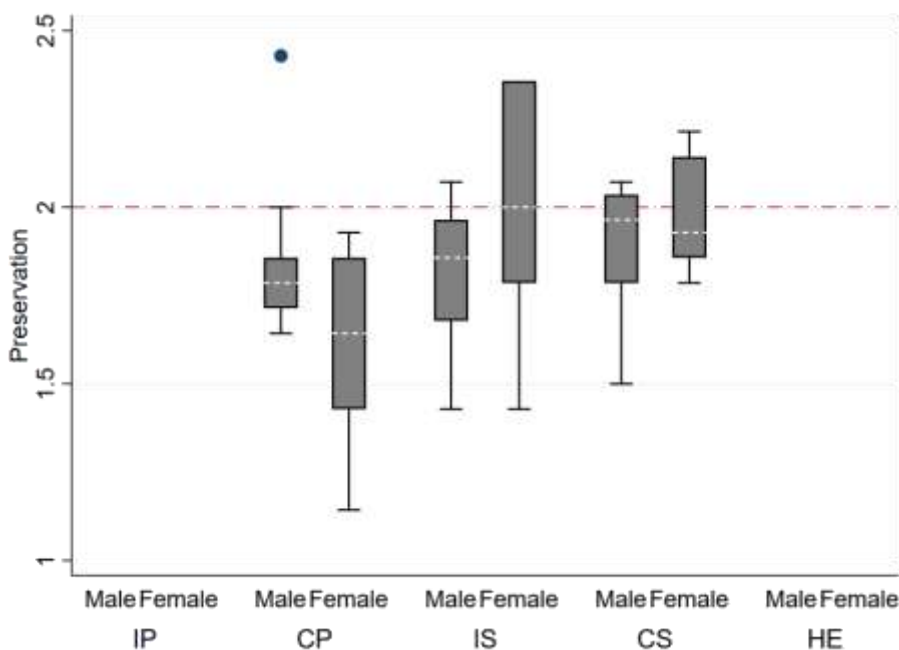
Figure 1 shows that individuals with lower educational levels, i.e., those with incomplete primary (IP) and complete primary (CP), presented a lower perception of cultural heritage preservation where a considerably wide dispersion in the data was identified, especially in the category of complete primary (CP) within the male population with variability in perceptions within the same educational level.

As the educational level increased, passing through incomplete secondary (IS), complete secondary (CS) and, finally, higher education (HE), the median level of preservation also showed a progressive increase, i.e., academic training induces the awareness and appreciation of cultural heritage due to greater exposure to historical, civic and cultural knowledge at more advanced educational levels.

Differentiation by sex allowed us to find that women presented a more homogeneous distribution in their responses throughout the different educational levels, while men exhibited greater variability, particularly at the lower educational levels. The completed primary school level (PC) stood out for its high dispersion in the perception of preservation; however, this dispersion was reduced at higher educational levels, where responses tended to cluster around higher values of perception of preservation.

**Figure 1.**

*Level of preservation by level of education achieved.*



From a public policy and education perspective, these findings reinforce the importance of integrating content on cultural identity, history, and heritage into educational curricula, thus promoting greater awareness and commitment to the preservation of the cultural heritage of communities.

Table 4 presents the results of the ordered logistic regression model examining factors influencing perceptions of cultural heritage preservation in the community. It is important to note that the small sample size (n=50) limits the statistical power of this analysis, increasing the

potential for Type II errors (i.e., failure to detect true effects) and necessitating cautious interpretation of marginal significance levels. The model overall achieved statistical significance (LR  $\chi^2(12) = 101.3$ ,  $p < 0.001$ ), with a pseudo- $R^2$  of 0.4026. The results indicate that the probability of a person having a higher perception of cultural heritage preservation is positively influenced by most variables considered, except for age, which showed a negative but non-significant relationship.

**Table 4.**

*Ologit regression results matrix*

Preservation	Coefficient	z	P> z	[95%	Conf. Interval]
Age	-1.22	-1.22	0.224	-3.21	0.75
Education	1.50	3.43	0.001	0.64	2.36
C1	1.23	4.12	0.000	0.64	1.82
C2	1.56	5.53	0.000	1.01	2.12
P	0.97	3.44	0.001	0.41	1.52
F	1.07	3.99	0.000	0.54	1.59
Ec	1.54	2.46	0.014	0.31	2.78
S1	1.89	2.93	0.003	0.62	3.16
S2	0.68	1.74	0.082	-0.08	1.46
E1	1.11	2.88	0.004	0.35	1.86
E2	1.89	3.72	0.000	0.89	2.89
E3	1.31	3.8	0.000	0.63	1.98

*Note.* Log likelihood = -75.159753. LR ( $\chi^2(12)$ ) = 101.3. Prob >  $\chi^2$  = 0.000. Pseudo R<sup>2</sup> = 0.4026

Among the examined variables, educational level demonstrated a positive and statistically significant relationship with preservation perception (Coeff. = 1.50,  $p = 0.001$ ), suggesting that as a person's level of education increases, their propensity to value heritage preservation also increases. Similarly, conservation of cultural elements (C1: Coeff. = 1.23,  $p < 0.001$ ) and conservation efforts (C2: Coeff. = 1.56,  $p < 0.001$ ) emerged as strong positive predictors, indicating that both the perception of conservation status and active preservation efforts positively affect awareness of the importance of these resources.

The effectiveness of cultural event promotion (P: Coeff. = 0.97,  $p = 0.001$ ) and allocation of financial resources (F: Coeff. = 1.07,  $p < 0.001$ ) also showed significant positive relationships with heritage preservation perception, which indicates efficient promotion of cultural events strengthen appreciation and recognition of cultural heritage, while adequate investment in heritage management reinforces the community's appreciation of preservation efforts.

In economic and social terms, knowledge of employment-generating projects (Ec: Coeff. = 1.54,  $p = 0.014$ ) showed a significant effect, implying that when people perceive that cultural heritage preservation can contribute to economic development, their appreciation increases. Similarly, awareness of heritage conservation programs (S1: Coeff. = 1.89,  $p = 0.003$ )

demonstrated significant positive associations, emphasizing the need to integrate into the community initiatives that strengthen identity and commitment to heritage conservation.

Environmental dimensions also proved influential, with implementation of environmental conservation projects (E1: Coeff. = 1.11,  $p = 0.004$ ), environmental education actions (E2: Coeff. = 1.89,  $p < 0.001$ ), and consideration of heritage protection in infrastructure projects (E3: Coeff. = 1.31,  $p < 0.001$ ) all showing significant positive relationships with the outcome variable. These findings reaffirm that cultural heritage protection depends on direct conservation strategies, as well as environmental and educational policies that promote sustainability.

Cultural participation (S2: Coeff. = 0.68,  $p = 0.082$ ) showed a positive but statistically non-significant trend at conventional levels, while age demonstrated no statistically significant relationship (Coeff. = -1.22,  $p = 0.224$ ). These results indicate that heritage valuation is not determined by age factors but rather by access to information, participation opportunities, and knowledge about conservation initiatives.

A marginal effect was applied to the model used in the research for outcome 2 to determine how a unit change in the independent variable affects the probability that the dependent variable heritage preservation is in category 2, keeping the other variables constant.

**Table 5.**

Results of marginal effect for an outcome 2

Variable	dy/dx	Delta-method				
		Std. Err.	z	P>z	[95% Conf. Interval]	
Age	-0.012	0.019	-0.66	0.507	-0.051	0.025
Education	0.015	0.018	0.88	0.048	-0.019	0.051
C1	0.013	0.013	0.93	0.051	-0.014	0.040
C2	0.016	0.018	0.90	0.039	-0.019	0.052
P	0.010	0.011	0.93	0.044	-0.011	0.031
F	0.011	0.013	0.87	0.036	-0.014	0.036
E	0.016	0.019	0.83	0.045	-0.022	0.054
S1	0.019	0.024	0.82	0.014	-0.028	0.068
S2	0.007	0.008	0.91	0.004	-0.008	0.022
E1	0.011	0.013	0.85	0.006	-0.015	0.038
E2	0.019	0.021	0.95	0.044	-0.021	0.061
E3	0.013	0.016	0.84	0.003	-0.018	0.046

Table 5 shows the result of how an increase of one level of education increases the average probability of being in category 2 by 1.59%, having a positive impact on the perception of cultural preservation. In addition, an increase in the factor of conservation of cultural elements (C1) and efforts in the conservation of cultural heritage increases the average probability of being in the category established in the research by 1.3% and 1.65%, respectively.

It was also found that increasing the effectiveness of the promotion of cultural events will have a positive effect. The probability of being in the threshold established in the research for heritage preservation, in addition, when the allocation of financial resources for cultural heritage management is increased, is also a significant factor in the research model.

The knowledge of projects that generated employment increases the probability of the perception of heritage preservation by 1.63%. Likewise, the social factor is significant and positive, i.e., knowledge of programs that promote heritage preservation and participation in cultural activities increase the probability of being at the threshold of the research by 1.99% and 0.72%, respectively. Regarding the environmental factor, it was found that the implementation of environmental conservation projects and the consideration of infrastructure projects in the protection of cultural heritage reflect the interrelation between cultural preservation and environmental sustainability.

**Table 6.**

Results of the hypothesis

Hypothesis	Statement	Result
H1	Education has a positive effect on heritage preservation.	Supported ( $p = 0.001$ )
H2	Age has a significant effect on heritage preservation.	Not supported ( $p = 0.224$ )
H3	Conservation of cultural elements (C1) has a positive effect.	Supported ( $p < 0.001$ )
H4	Efforts in heritage conservation (C2) have a positive effect.	Supported ( $p < 0.001$ )
H5	Promotion of cultural events (P) has a positive effect.	Supported ( $p = 0.001$ )
H6	Allocation of financial resources (F) has a positive effect.	Supported ( $p < 0.001$ )
H7	Employment projects (Ec) positively influence preservation.	Supported ( $p = 0.014$ )
H8	Knowledge of heritage programs (S1) positively influences preservation.	Supported ( $p = 0.003$ )
H9	Cultural participation (S2) positively influences preservation.	Not supported ( $p = 0.082$ )
H10	Environmental projects (E1) positively influence preservation.	Supported ( $p = 0.004$ )
H11	Environmental education (E2) positively influences preservation.	Supported ( $p < 0.001$ )
H12	Infrastructure consideration (E3) positively influences preservation.	Supported ( $p < 0.001$ )

Turning to the practical implications of the results, it was found that among the most important variables was education, likely because an increase in the level of education increases

the probability of a good perception of conservation through its strategies, which increase the probability of a positive perception, and environmental factors have a significant impact on the study variable.

Table 6 shows that ten out of twelve independent variables had a significant and positive influence on the perception of cultural heritage preservation. Education, conservation practices (C1, C2), promotion of events, financial resources, employment projects, heritage programs, and environmental dimensions (E1, E2, E3) all strengthened community appreciation of heritage, confirming their importance as strategic drivers. In contrast, age and cultural participation did not show statistical significance, indicating that generational differences and frequency of participation alone were not decisive in shaping perceptions. Overall, the findings demonstrated that educational, economic, conservation, and environmental factors played a leading role in reinforcing positive attitudes toward cultural heritage preservation.

## DISCUSSION

The results obtained in this research provide empirical evidence on the factors that influence the perception of cultural heritage preservation in the district of La Jalca, Amazonas, through the variables of educational level, active conservation, promotion of cultural events, and allocation of financial resources. These findings are in dialogue with previous studies conducted in Latin America and globally, allowing the identification of convergences and nuances that enrich the academic debate on heritage management and local development.

First, the positive impact of educational level (Coeff. = 1.50,  $p = 0.001$ ) on heritage appreciation is a cornerstone finding. The marginal effect indicates that a one-level increase in education raises the probability of a positive preservation perception by 1.59%. This statistically significant relationship aligns with global studies (Hidalgo-Sánchez et al., 2022) but is critically informed by La Jalca's local data. The high dispersion in perceptions among individuals with only primary education (34% of the sample), particularly men, is not just a statistical observation but reflects a tangible local challenge: access to quality formal education that integrates local history is inconsistent. This finding reinforces Castro's (2020) emphasis on education as a key municipal strategy, suggesting that for La Jalca, developing context-specific pedagogical materials featuring its unique circular stone structures and traditions is not just beneficial but essential to reduce awareness gaps and foster identity from an early age.

Furthermore, the strong positive coefficients for active conservation of cultural elements (C1: Coeff. = 1.23,  $p < 0.001$ ) and preservation efforts (C2: Coeff. = 1.56,  $p < 0.001$ ) must be viewed against La Jalca's key institutional challenge, which means the lack of official heritage records. The marginal effects show these factors increase the probability of positive perception by 1.3% and 1.65%, respectively. This data reveals a community that is highly responsive to tangible action, even in the absence of formal frameworks. This contrasts with the context described by Ledesma (2019) in Cuba, where management plans are built on existing inventories. In La Jalca, the findings suggest the most effective strategy is a decentralized,

community-led approach, such as participatory mapping workshops that empower villagers to document their own heritage, as proposed by Chheda et al. (2024) for lesser-known sites. The positive perception is directly tied to visible, local effort rather than top-down intervention.

The remarkable results for the allocation of financial resources (F) (Coeff. = 1.07,  $p < 0.001$ ; Marginal effect: +1.59% probability) and knowledge of employment-generating projects (Ec) (Coeff. = 1.54,  $p = 0.014$ ; Marginal effect: +1.63% probability) are particularly salient in a district with limited economic alternatives. This data powerfully quantifies the theory proposed by Chong & Balasingam (2019) that heritage can boost local economies. In La Jalca's specific economic context, it demonstrates that the explicit linkage between heritage and livelihood is a fundamental motivator for preservation. For residents, the value of a historic site is intrinsically linked to its potential to generate guide jobs, artisan markets, or homestay income.

The strong positive coefficients for the environmental variables: implementation of environmental projects (E1): Coeff. = 1.11,  $p = 0.004$ ; environmental education (E2): Coeff. = 1.89,  $p < 0.001$ ; and heritage-conscious infrastructure (E3): Coeff. = 1.31,  $p < 0.001$ , speak to the intertwined reality of cultural and environmental heritage in this Andean-Amazonian transition zone. This empirical result strongly supports the integrated management approach advocated by Vinodan & Meera (2022). For communities in La Jalca, an infrastructure project (E3) that protects a pre-Hispanic canal system also conserves a vital water source. Therefore, environmental education (E2) is, in practice, cultural heritage education. Strategies must promote a holistic concept of "territorial heritage" that reflects this local, integrated understanding.

Finally, the data showing the non-significance of age ( $p = 0.224$ ) and the marginally significant effect of cultural participation (S2) (Coeff. = 0.68,  $p = 0.082$ ; Marginal effect: +0.72% probability) carry specific implications. The lack of significance for age dispels the assumption that older generations are the sole guardians of tradition, a finding consistent with Li et al. (2020) in Asian contexts. It reveals that in La Jalca, heritage appreciation is not automatic with age but is driven by access to information and projects. The weak significance of participation frequency suggests that simply holding festivals is insufficient. The quality and meaning of participation matter more, supporting Nowacki's (2021) focus on interpretive programs. In La Jalca's context, this could mean shifting from sporadic events to creating ongoing, intergenerational knowledge-transfer programs (where elders teach traditional pottery to youth), thus strengthening intangible heritage as a tool for sustainable development, as highlighted by Cortés (2021).

The findings of this study have important implications for both local governance and community development in the district of La Jalca. Confirmation that education, conservation strategies, financial allocation, and environmental initiatives positively influence the perception of cultural heritage preservation suggests that policies integrating these dimensions can generate sustainable outcomes. In practical terms, local authorities are encouraged to strengthen educational programs on heritage, allocate adequate financial resources, and design

participatory conservation strategies that involve the community. The evidence also implies that heritage management should be articulated with environmental projects and infrastructure planning, ensuring that preservation efforts contribute to cultural continuity and broader social and economic development.

## CONCLUSIONS

Educational level is a significant determining variable in the perception of cultural heritage preservation. Our results show that the higher the educational level, the greater the appreciation of heritage, with an ascending median from primary to higher education, which links formal education with historical awareness. The dispersion in basic educational levels, particularly among men, highlights the need to integrate cultural content into school curricula to reduce knowledge gaps and foster identity from an early age.

Active conservation and the allocation of financial resources form the basis for effective heritage management. The conservation of cultural elements and preservation efforts show positive coefficients, indicating the importance of decentralized strategies adapted to local contexts. In addition, the finding that resource allocation increased the probability of positive perceptions by 1.59% corroborates the claim that cultural tourism is an economic driver when there is sustainable investment.

Community participation and cultural promotion require qualitative rather than quantitative approaches. Although participation in cultural activities had a positive impact, its low statistical significance ( $p=0.082$ ) suggests that frequency of participation does not guarantee greater heritage appreciation where intergenerational educational programs and participatory methodologies are more effective in generating engagement than sporadic activities.

The age variable did not show statistical significance, which suggests that the perception of heritage is not conditioned by age, but rather by access to information and opportunities. This finding demystifies stereotypes that associate heritage appreciation with older age groups and that awareness depends on factors such as access to concrete projects and inclusive dissemination, thus reinforcing the urgency of policies that involve young people through innovative tools, such as digital platforms or cross-cutting community projects.

### **Declaration of competing interests**

The authors certify that they have NO conflicts of financial or non-financial interests, such as personal or professional relationships, affiliations, knowledge, or beliefs, in the subject matter or materials discussed in this manuscript.

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