



## Research Article

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# Empirical Study on the Pottery Environment and its Contribution to the Economic, Cultural and Institutional Growth of the Community of Huancas, Amazonas, Peru: An Analysis with Smart PLS

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## Abstract

*This study focuses on analyzing how the pottery environment contributes to the economic, cultural and institutional growth of the community of Huancas, Amazonas, Peru. The research has a non-experimental approach at a descriptive correlational level. A total of 35 pottery families participated in the survey and the data collected were analyzed in SPSS and Smart PLS 4.0 statistical programs. The results indicate that the pottery field in the community of Huancas has contributed positively to economic, cultural and institutional growth (0.942; 0.935 and 0.915) respectively; this work represents the cultural identity of the community, based on the regular production of pots for cooking food and a great variety of vessels, with women being the main protagonists of these crafts (85.7%). In addition, the results indicate that pottery has promoted experiential rural tourism in the community, thus playing a fundamental role in the daily life of the community's artisan families. This study highlights a little-studied aspect of pottery making, and the results will guide decision-making in the management and promotion of this traditional activity, relating it to other activities such as tourism.*

**Keywords:** Pottery, culture, development, Huancas

## 1. Introduction

The development of pottery demonstrates a planning system of different craft areas; previously, ceramic trade was underdeveloped and utensils were used according to needs (Malykh, 2022). Researchers point out that the distribution of ceramics was the result of practices related to production and exchange, but not necessarily by ethnic affiliation (Navas et al., 2022). However, Ramos & Cabrero (2022) state that the representations indicate their ideology, thus transmitting the way of seeing the world of the living and the dead. On the other hand, researchers LeMoine et al. (2022) argue that the production of decorative vessels in the Southern Maya Lowlands regions helped to form important links of political, economic and social interaction. At present, pottery is of great help in the search for important clues about Neolithic evolution (Navarro et al., 2022).

The potter has the ability to manually convert, through molding, clay into decorative, domestic and culinary objects, the potter and the potter are deeply related, as they employ similar techniques in their work and combine different tools for modeling, sculpting and decoration (Resler et al., 2021). Pottery practice and work is inherited from parents to children, where in childhood learning is instructed into adulthood, as it is an activity that is learned by watching and practicing, and requires many years to gain experience (Mithen, 2020). Today, the art of pottery is at risk of disappearing due to the impact of industry, technology and changes in consumer habits, which has relegated this craft to a corner where it barely receives attention from a society that has stopped valuing things made in a natural way (Instituto de Gestión Cultural y Artística, 2019).

The introduction of ceramics in medieval times played an important role in the economic and commercial policy and in the daily life of the people and communities that used them (Polat, 2022). It spread throughout southern Italy and is thought to be an important chronological indicator for the development of prehistoric settlements and cultural traditions that to this day still preserve their decorations using non-invasive techniques in the production of their objects (Armetta et al., 2023). In the Dan Kwian market, the purchase of pottery boosts cultural tourism, economic growth and entrepreneurship of potter individuals, in addition to the fact that the products are tailored to the needs of consumers (Suvittawat, 2021).

The artisanal technique of potters in each community constitutes an intangible cultural heritage that causes a positive impact at the local and community level, privileging the interaction between artisans, the local community and academia (Grácio et al., 2023). According to researchers Kvalbein & Småland (2023), ceramic production and pottery practice are among the oldest human skills, supported by natural materials such as clay. In the same sense, researchers Dubreuil et al. (2023) affirm that clay and mud symbolize an important step in the cultural advancement of pottery communities, due to their transcendental repercussions in the processing, storage, construction and symbolic expression of objects made of mud and clay in past human societies.

The art of making fired clay pots is known as pottery, a craft that has been perfected by humans over time and has made it possible to make different types of objects that symbolize part of the history of human life. This name is also given to the stores where they are commercialized and to the person who makes these pieces (Scaro, 2019). Crafts are a labor-intensive job, and often potters do not take into consideration the hard work involved in producing handmade pieces when calculating the cost, since many times the materials they use are from their homeland or place of origin, and many of them are not priced, as is the case of clay (Paz, 2021). Therefore, in order to prevail, handicrafts should be viewed from an entrepreneurial approach, with the sole objective of attracting and attracting the attention of public and private entities that are committed to the advancement and development of the communities that carry out this work (Elías et al., 2021).

Artisanal activity in recent years continues to be based on the usual, without aligning progress and innovation in the potter's mentality, which involves the modernization of tasks that allow addressing more competitive markets. Currently, it represents the historical value of each town or city, so it is essential to relate it to tourism, an economic activity that drives the development of communities (Fuenzalida, 2021).

According to Steinbach (2020), the socioeconomic and cultural context in which the pottery population produces, designs and markets handcrafted pieces made with clay grows without political and cultural orientation. In that sense, the Centro de Investigación de Diseño Artesanal y Comercialización (CIDAC) trains artisans to create new designs while maintaining the local identity and high quality of the products. In addition, Juárez et al. (2020) orient pottery practices from an integrative point of view, opting to delineate new precisions of those vessels considered local and typical of the time, as well as to identify cases of extra-regional elaboration. This would contribute to the technological, morphological and functional knowledge little studied and would generate interpretations linked to other aspects, such as the historical trajectory of a particular way of making ceramic paste and forms of consumption.

According to Franco (2019), the study of pottery practices and traditions makes it possible to identify technological aspects that vary temporally and others that remain relatively stable. For his part, Prado (2016) mentions that archaeological pottery has been studied for a long time; however, recently, strategies are beginning to be applied that combine systematic analysis and archaeometric techniques to characterize the various stages of production, such as local manufacture, and to explore different mechanisms of circulation of different pottery practices, especially those related to techniques and decorative repertoires.

Likewise, Aguirre (2019) states that the use of pottery for the tourist development of a city is essential, as long as measures focused on sustainable tourism development are proposed, where the population is willing to work together so that the city develops touristically and is committed to providing warm attention to its visitors. For their part, Belaúnde et al. (2017) mention that the pottery procedures and techniques practiced in native communities hold great potential in the cultural expression of the inhabitants of these localities. Also, the Ministry of Culture of Peru (2015) points out that traditional Awajún pottery expresses ancestral knowledge of this community in relation to the materials, tools, processing techniques and painting used to make the products.

According to Meléndez & Mendoza (2017), the influence of the ancestral pottery technique on the demand for pottery in the community of Huancas is relatively low, as there is little demand for pottery products. In this sense, they recommend implementing a handicraft development proposal based on efficient marketing and promotion strategies for pottery in this district. For his part, Narváez (2014) argues that Huancas pottery is a living expression of the past, recognized as cultural heritage of the nation for the cultural values it expresses for the community.

In this study, he highlights the relevance and uniqueness of Huancas pottery, whose identity is closely linked to the handmade production of pottery, this activity stands out for its focus on the production of utensils for everyday use, including pieces designed specifically for cooking and food consumption, as well as a wide variety of vases and candlesticks. Pottery making in Huancas has become a deep-rooted tradition in the community, and the predominant role played by women in this craft is especially notable. They actively participate in each stage of the elaboration of the pieces, from the collection of raw materials to the subsequent sale of the finished products. The dedication and skill shown by women in pottery making reflect the transmission of knowledge and skills over generations, which contributes to the preservation of this rich craft tradition.



Figure 1. Huanquina woman making pottery

The community of Huancas is known as the pottery town, since the majority of the population, especially women, are dedicated to the elaboration of pottery using techniques acquired from the Huancas and Chachapoyas cultures, thus turning each house in the village into a rustic handicraft center. In this sense, the objective of this research is to analyze how the pottery environment contributes to the economic, cultural and institutional growth of the community of Huancas, Amazonas, Peru.

## 2. Methodology

The community of Huancas is located in the province of Chachapoyas, department of Amazonas, in northern Peru. This picturesque district is located only 10 km from the city of Chachapoyas, and has a variety of tourist attractions, including the Huancas viewpoints and the clay pot workshops, where you can appreciate the rich local handicrafts. The community takes pride in preserving these craft traditions that have been passed from generation to generation (Organización Política "Unidos al Campo", 2018).



Figure 2. Geographical location of the study site

The present study has a non-experimental approach of descriptive correlational level, to collect the necessary information, a Likert-type questionnaire was applied to the potters of the Huancas community, which was validated by experts in the field, obtaining a reliability statistic (Cronbach's alpha of 0.920). The data obtained were processed in IBM SPSS Statistic version 26 and in Smart PLS 4.0, a partial least squares structural equation modeling (PLS-SEM). The sources of information used to support the research included books, scientific articles and official documents provided by the district municipality of Huancas. The sample population was composed of 35 heads of households of families dedicated to pottery activity, belonging to different associations mentioned below.

**Table 1.** Number of associated and independent potters in the community of Huancas.

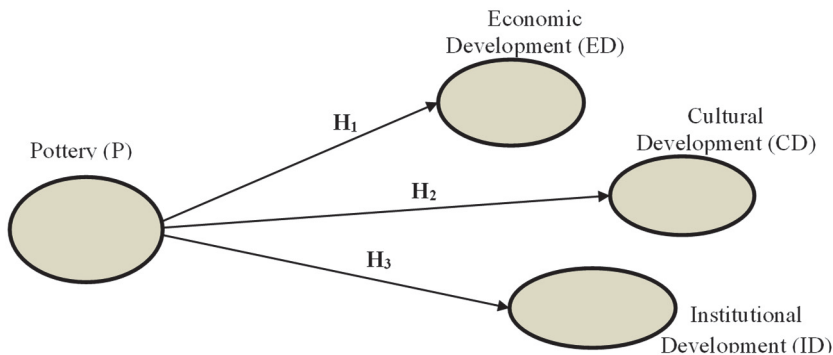
N°	Associations	Men	Women	Total
1	"La cusana" Association	2	11	13
2	"La Puctina"	1	6	7
3	"Utcay Shamuy"	2	9	11
4	Independent potters	0	4	4
<b>Total</b>		<b>5</b>	<b>30</b>	<b>35</b>

Note: The people who dedicate themselves to the pottery practice independently are not explicit as a source of information in any institution, however, field work was done to collect the information detailed in Table 1.

The hypotheses to be approved in this research are:

- H1. Pottery has a significant positive influence on the development of the economy of the community of Huancas.
- H2. Pottery has a significant positive influence on the cultural development of the community of Huancas.
- H3. Pottery has a positive significant influence on the development of institutions in the community of Huancas.

Based on the above hypothesis, the research model was developed in Fig. 3. We presume that pottery has a significant positive influence on the development of the economy, culture and institutions of the Huancas community. This may be essential for decision making by the authorities.



**Figure 3.** Proposed study framework.

### 3. Results

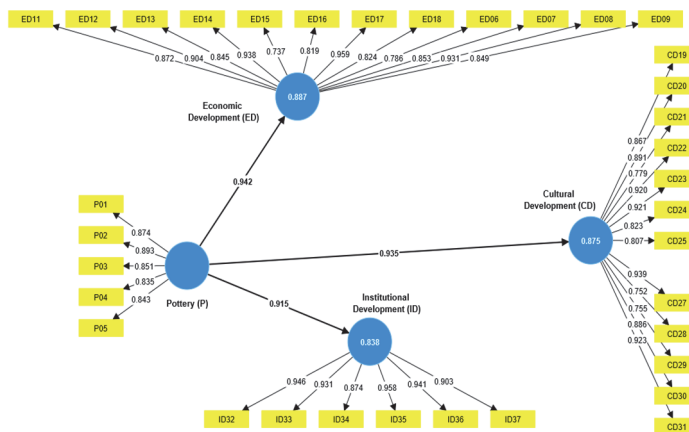
This section presents the findings derived from the research and details the results of the data analysis obtained.

**Table 2.** General aspects of the respondents

Demographic variables	Category	Frequency	Percentage
Age	20-35 years old	5	14.3%
	35-50 years old	8	22.9%
	Over 50 years old	22	62.9%
Gender	Female	30	85.7%
	Male	5	14.3%
Grade of Education	No education	21	60.0%
	Primary	9	25.7%
	Secondary	3	8.6%
	Higher Technical	2	5.7%
<b>Sample population</b>		<b>35</b>	<b>100%</b>

The study of demographic variables analyzed the age, gender and educational level of the participants. The results showed that the majority of the participants (62.9%) were over 50 years old, followed by 22.9% who were between 35 and 50 years old and 14.3% who were between 20 and 35 years old. In terms of gender, women predominated (85.7%) compared to men (14.3%), indicating that the pottery activity is mainly associated with the female role. With respect to educational level, it was observed that 60% of the participants had no schooling at all, 25.7% had completed only primary school, 8.6% had completed secondary school and 5.7% had a technical career.

To assess the quality of the model, the researchers used Smart-PLS software and estimated convergent validity, discriminant validity and component reliability. Convergent validity was examined using factor loadings, Cronbach's alpha and composite reliability (CR) for each construct. Discriminant validity was verified by the average variance extracted (AVE) and the comparison of the square root of the AVE with the correlations between constructs. Component reliability was tested using Cronbach's alpha and the CR for each construct. The recommended criteria for these indicators are: factor loadings greater than 0.7, Cronbach's alpha and CR greater than 0.7, and AVE greater than 0.5 (Fornell & Larcker, 1981; Hair Jr et al., 2014). The results of the measurement model are presented below.



**Figure 4.** Structural Equations Measurement Model

All the items of the model present an external load higher than the suggested level of 0.7, which indicates a good convergent validity of the model. However, those items presenting an external loading lower than 0.7 are eliminated from the model, following the criterion of Hair Jr et al. (2014). Table 3 shows the external loadings of the items.

**Table 3.** Item loadings

	Cultural Development (CD)	Economic Development (ED)	Institutional Development (ID)	Pottery (P)
CD19	0.866772325			
CD20	0.89098374			
CD21	0.778899163			
CD22	0.920482434			
CD23	0.92129971			
CD24	0.82331204			
CD25	0.807460116			
CD27	0.938510298			
CD28	0.752171279			
CD29	0.755369002			
CD30	0.886479798			
CD31	0.923294029			
ED06		0.786392453		
ED07		0.852674798		
ED08		0.930662307		
ED09		0.849250806		
ED11		0.871777608		
ED12		0.903782717		
ED13		0.845468248		
ED14		0.938386922		
ED15		0.737169296		
ED16		0.81872751		
ED17		0.959352592		
ED18		0.823604045		
ID32			0.945775328	
ID33			0.931049568	
ID34			0.874444063	
ID35			0.957778912	
ID36			0.9412212	
ID37			0.903198392	
Po1				0.87445602
Po2				0.893297749
Po3				0.850731008
Po4				0.835027345
Po5				0.842632906

The reliability of the model used for this study is shown below. Reliability was estimated using Cronbach's alpha coefficient, which measures the internal consistency of the items that make up each variable, and two composite reliability indices, which measure the proportion of true variance over the observed variance.

**Table 4.** Reliability

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Variance extracted mean (AVE)
Cultural Development (CD)	0.966713742	0.970515389	0.970823133	0.736100805
Economic Development (ED)	0.968009222	0.972523045	0.971856075	0.74312058
Institutional Development (ID)	0.966552711	0.96775505	0.973025044	0.857500303
Pottery (P)	0.911444268	0.913456583	0.933902199	0.738739666

Table 4 shows the results of the reliability assessment of the model's constructs. It can be seen that all the constructs present high values of Cronbach's alpha, composite reliability and average variance extracted, indicating excellent reliability of their measures. These values far exceed the recommended thresholds for each indicator. Therefore, it can be concluded that the constructs of the model have high internal consistency and adequately represent their respective phenomena.

**Table 5.** Discriminant validity

	Cultural Development (CD)	Economic Development (ED)	Institutional Development (ID)	Pottery (P)
Cultural Development (CD)	0.857963172			
Economic Development (ED)	0.801907652	0.862044419		
Institutional Development (ID)	0.819249159	0.846965868	0.926013122	
Pottery (P)	0.835436555	0.841660938	0.815451697	0.85949966

According to the data in Table 5, it can be observed that all the constructs present good discriminant validity, since the square root of the AVE (shown in the diagonal of the table) is higher than the correlations between the constructs (shown in the other elements of the table). This means that each construct measures a different phenomenon and is not confounded with the other constructs. Therefore, it can be concluded that the model has a good quality in terms of discriminant validity.

**Table 6.** R-square and adjusted R-square

	R-squared	Adjusted R-squared
Cultural_Development (CD)	0.875041549	0.871254929
Economic_Development (ED)	0.886725323	0.883292757
Institutional_Development (ID)	0.83805181	0.833144289

The R-squared is the percentage of the variance of the endogenous construct that is explained by the exogenous constructs. It is recommended that the R-squared be greater than 0.25 to consider that there is a moderate effect, and greater than 0.5 to consider that there is a strong effect. The adjusted R-squared is a corrected version of the R-squared that takes into account the number of exogenous constructs and the sample size. It is recommended that the adjusted R-squared be as close as possible to the R-squared, indicating that the model is not overfitted.

According to the data in Table 6, it can be seen that all endogenous constructs have high R-squared and adjusted R-squared values, indicating that the exogenous constructs explain a large part of their variance. These values exceed the recommended threshold of 0.5 to consider that there is a strong effect. Furthermore, it can be observed that the adjusted R-squared is very close to the R-squared in all cases, indicating that the model is not over-fitted and has a good predictive quality. Therefore, it can be concluded that the model has a good overall fit and a high explanatory power.



**Table 7.** Results of the measurement model

	Median	Standard deviation	T-statistic	p-value
Pottery (P) -> Cultural Development (CD)	0.201610	1.000000	0.176668	0.009923
Pottery (P) -> Economic Development (ED)	0.228554	1.000000	0.185996	0.007505
Pottery (P) -> Institutional Development (ID)	0.093825	1.000000	0.161221	0.015839

The results in Table 7, show that there is a positive and significant relationship between Pottery and the three development constructs, with the strongest effect in the case of Economic Development. Therefore, the hypotheses stated above are accepted.

#### 4. Discussion

The results show a strong positive correlation of pottery with the economic, cultural and institutional development of the Huanca community of 0.942; 0.935 and 0.915 respectively. The following hypotheses were tested: H1. Pottery has a significant positive influence on the development of the economy of the Huancas community. H2. Pottery has a significant positive influence on the cultural development of the community of Huancas. H3. Pottery has a positive significant influence on the development of institutions in the community of Huancas.

The findings of this research are consistent and align with previous studies, such as that of the researcher Polat (2022), who has highlighted the importance of pottery, to know relevant information about the political, economic and commercial life in the regions where it was practiced. Likewise, the importance of the craft activity as intangible cultural heritage is supported, as stated by Grácio et al. (2023).

Huancas pottery is characterized by the usual production of vessels for cooking food and a great variety of vases, in that sense the results differ from those of researcher Bernier (2009) that, in the northern coast of Peru, craftsmanship is emphasized in the production of ritual pottery, funerary remains and huacos; and with the results of Cardini (2012) in the sense that, craft production.

#### 5. Conclusions

Pottery has proven to be an important economic activity for families in the community of Huancas, which is dedicated to the production of handmade clay pottery. It allows potters to earn income for their families, as well as generate employment for others who collaborate in the sale and promotion of their products. In addition, pottery attracts the interest of tourists, which contributes to improving the community's income level. Therefore, it is necessary to implement development policies that promote this economic activity more effectively and allow for greater integration of the economy, in harmony with other activities such as tourism.

Culturally, this activity represents the authentic expression of the Huancas culture; the link with mother earth and love for the community has turned pottery into a symbol of the identity of the working women, who are the main protagonists of this activity, which they have inherited from their ancestors and pass on to their descendants. Because of its cultural importance, pottery has been declared a national cultural heritage, which helps to value and promote local traditions, preserving ancestral techniques and native designs.

Institutionally, the pottery activity has fostered the formation of associations, such as "La Cusana," "La Puctina" and "Utcay Shamuy," which play a fundamental role in the organization, distribution and sale of pottery.

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