

Sustainable Regional Economic Development through Cultural and Human Capital: Evidence from Indonesia

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ABSTRACT

Research Originality: This study offers novel insights by examining the mediating role of human capital in the relationship between cultural capital and regional economic development in Indonesia.

Research Objectives: This study aims to examine the effect of cultural capital on Regional economic development and to investigate the mediating role of human capital in the relationship between cultural capital and regional economic development.

Research Methods: This study employs panel data regression analysis using the Fixed Effects Model (FEM) and path analysis across 34 Indonesian provinces over the period 2019–2023.

Empirical Results: The findings indicate that cultural capital positively affects regional economic development. Cultural tourist attractions and intangible cultural heritage do not have a significant effect on regional economic development. Furthermore, human capital plays a significant moderating role in the relationship between cultural capital and regional economic development, suggesting that cultural capital contributes more effectively to regional development.

Implications: This study suggests that policymakers should continue to preserve and strengthen existing cultural capital across regions to improve access to public services and enhance living conditions. Ultimately, such an approach can support sustainable economic development.

Keywords:

cultural economics; human development; regional economic development; panel data models

How to Cite:

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INTRODUCTION

To date, poverty remains a persistent challenge across nearly all countries worldwide, while efforts to improve societal welfare remain a central policy priority. In Indonesia, the poverty rate remains at approximately 8.25%, according to the Indonesian Central Statistics Agency. Consequently, countries around the world, including Indonesia, have committed to achieving the Sustainable Development Goals (SDGs) by 2030, with the eradication of poverty as a primary objective. Regional economic development is widely regarded as a critical driver in accelerating national economic growth, enhancing societal welfare, and reducing poverty (Paska et al., 2025; Song et al., 2022). Addressing challenges at the grassroots level is considered to have substantial potential to accelerate problem resolution at the national scale (Hu et al., 2022; Sarjiyanto et al., 2023). Regional economic development can be conceptualized as a process whereby local governments, in collaboration with communities and the private sector, strategically manage available resources to generate employment opportunities and promote sustained economic growth within a region (Widianingsih et al., 2023).

Cultural capital is increasingly recognized as a key driver of bottom-up development and economic growth. Cultural capital refers to a community's nonfinancial assets, including values, cultural heritage, beliefs, knowledge, norms, social networks, and institutional practices that shape economic behavior and productivity (Plaiphum & Tansuchat, 2023). Beyond its symbolic meaning, cultural capital functions as a strategic asset that can influence economic outcomes through investment, consumption, and innovation (Kafka & Kostis, 2021). According to Bourdieu (2018), cultural capital is a form of non-economic asset, alongside economic and social capital, that influences individuals' access to opportunities such as education, employment, and social mobility. Within the broader framework of social reproduction theory, cultural capital explains that social inequality arises not only from economic disparities but also from unequal access to values, knowledge, skills, and culturally recognized credentials, thereby contributing to the persistence of advantages and disadvantages across generations (Goulding, 2008). Cultural capital developed within the family context enhances an individual's capacity to acquire and mobilize cultural resources that support personal and social advancement. It can be categorized into three forms: embodied cultural capital, which encompasses values, skills, and cultural participation; objectified cultural capital, referring to tangible assets such as books and tools; and institutionalized cultural capital, reflected in formal qualifications, including educational degrees and professional credentials (Kamphuis et al., 2018).

Previous studies by Kostakis and Lolos (2024) found that cultural capital has a positive effect on economic growth but a negative effect on unemployment rates. Rooted in local values, traditions, and knowledge systems, cultural capital shapes how communities respond to development initiatives. Its effective utilization can foster greater participation, strengthen social cohesion, and ultimately promote more sustainable and inclusive economic growth (Hale et al., 2023). Cultural capital can play an important role in promoting economic growth, particularly in rural areas and developing countries, by enhancing individuals' skills, knowledge, and capacity to adapt to technological change.

Through improved access to education, public cultural services, and community-based learning opportunities, cultural capital strengthens human productivity, expands economic participation, and supports inclusive development (Cui et al., 2024). (Zugravu-Soilita et al., 2021) also indicate that cultural capital, reflected in local norms and values, contributes positively to economic outcomes by strengthening social relations and enhancing productivity, including higher production and yield, which suggests that cultural capital can stimulate economic growth both directly, through improved economic performance, and indirectly, by reinforcing social capital that supports productive activities.

In the other hand, human capital which reflected in education, skills, knowledge, and health also contributes positively to economic growth by enhancing labor productivity, innovation, and production capacity which suggests that human capital can stimulate economic growth both directly, through improved workforce performance, and indirectly, by strengthening social and institutional capacities that support productive economic activities (Kanval et al., 2024; Sultana et al., 2022). (Khan et al., 2023; Pellegrini et al., 2021) also argue that human capital plays a crucial role in strengthening a nation's economic sustainability by encouraging investment growth. Differences in the level of human capital development across regions may also lead to uneven regional development, ultimately influencing overall economic growth.

Therefore, the effect of cultural capital on economic growth may operate not only directly, but also indirectly through the development of human capital. Human capital is expected to exert a positive role in strengthening the contribution of cultural capital to regional economic development. However, despite the growing body of literature on cultural capital and economic performance, limited attention has been given to examining the mediating role of human capital in this relationship. Accordingly, this study seeks to address this gap by investigating how human capital mediates the effect of cultural capital on regional economic development in Indonesia.

The remainder of this article is organized as follows. The next section outlines the research methodology, followed by a presentation of the empirical findings and an in-depth discussion of their theoretical and policy implications.

METHODS

This study employs a quantitative research design using balanced panel data covering 34 Indonesian provinces during the 2019–2023 period, yielding 170 observations. The study utilizes secondary data obtained from the Central Statistics Agency of Indonesia (BPS) and the Ministry of Culture. Panel data analysis was selected because it allows the study to simultaneously capture cross-sectional differences among provinces and time-series dynamics over the observation period, thereby producing more reliable and comprehensive estimates.

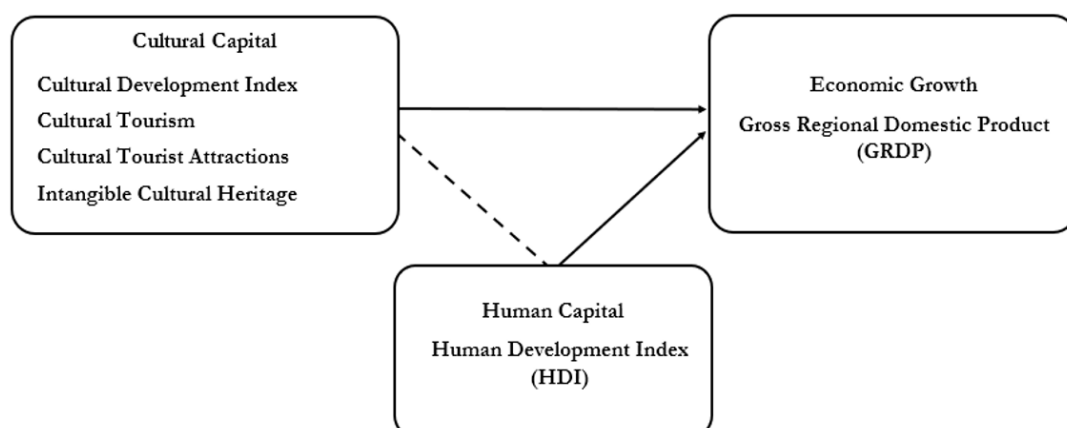
The analytical approach consists of panel data regression analysis and mediation analysis. Panel regression was employed to examine the direct relationship between cultural capital and regional economic development, as well as the effect of cultural capital on

human capital. Furthermore, mediation analysis using the Sobel test was conducted to assess whether human capital significantly mediates the relationship between cultural capital and regional economic development. The estimation procedure involved three alternative panel data models: the Common Effect Model (CEM), the Fixed Effect Model (FEM), and the Random Effect Model (REM). The most appropriate model was determined using the Chow, Hausman, and Lagrange Multiplier tests. To ensure the robustness of the estimation results, several classical assumption tests were also conducted, including tests for multicollinearity and heteroscedasticity. All statistical analyses were performed using EViews 12, and the Sobel mediation test was calculated with the Quantpsy Sobel Test Calculator.

The dependent variable in this study is regional economic development, proxied by province-level Gross Regional Domestic Product (GRDP) at constant 2010 prices. GRDP represents the total value added generated by all economic sectors within a region during a specific period and is widely used as an indicator of regional economic performance and development (Azmi et al., 2020; Yudhistira & Sofiyandi, 2018). The use of constant-price GRDP allows the analysis to reflect real regional economic conditions by eliminating the influence of inflation across time periods. Accordingly, higher GRDP values indicate stronger regional economic performance and greater economic capacity within provinces.

Finally, the mediating variable in this study is human capital, measured by the Human Development Index (HDI). HDI reflects the quality of human resources through three key dimensions: education, health, and a decent standard of living. As a comprehensive indicator of human capital development (Ghifara et al., 2022; Morse, 2023), HDI has been widely recognized as an important determinant of economic performance, as improvements in human resource quality contribute to higher productivity, greater value added, and increased economic output (Esquivias et al., 2022; Hickel, 2020; Prasajo et al., 2021). The conceptual framework of this study is presented in Figure 1.

Figure 1. Conceptual Framework



This study employs panel data regression analysis with a 5% significance level. According to Gujarati and Porter (2009), the estimated model should satisfy the criteria of the Best Linear Unbiased Estimator (BLUE). Accordingly, the diagnostic tests conducted

include tests for multicollinearity and heteroscedasticity in both cross-sectional and time-series dimensions. The most appropriate estimation model is selected through the Chow Test, Hausman Test, and Lagrange Multiplier Test to determine whether the Common Effect Model, Fixed Effect Model, or Random Effect Model is most suitable. Model 1, which examines the effect of cultural capital on GRDP, is specified as follows:

$$GDRP_{it} = \alpha + \beta_1 CDI_{it} + \beta_2 CT_{it} + \beta_e CTA_{it} + \beta_4 CH_{it} + \varepsilon_i \quad (1)$$

Furthermore, Model 2 is employed to examine the effect of cultural capital on human capital, as specified below:

$$HDI_{it} = \alpha + \beta_1 CDI_{it} + \beta_2 CT_{it} + \beta_e CTA_{it} + \beta_4 CH_{it} + \varepsilon_i \quad (2)$$

Finally, Model 3 examines the mediating role of human capital in the relationship between cultural capital and GRDP, as specified below:

$$GDRP_{it} = \alpha + \beta_1 CDI_{it} + \beta_2 CT_{it} + \beta_e CTA_{it} + \beta_4 CH_{it} + \beta_5 HDI_{it} + \varepsilon_i \quad (3)$$

Where GRDP denotes Gross Regional Domestic Product, HDI denotes the Human Development Index, CDI denotes the Cultural Development Index, CT denotes Cultural Tourism, CTA denotes Cultural Tourist Attractions, and ICH denotes Intangible Cultural Heritage. Furthermore, *i* represents the cross-sectional unit (province), while *t* denotes the time period (year). The parameter α is the constant term, β represents the estimated regression coefficients, and ε is the error term.

The Sobel test is employed as a validation instrument to examine the significance of the mediating variable within the path analysis framework, following the estimation of Model 3. This test assesses whether the indirect effect of the independent variable on the dependent variable, mediated by the mediating variable, is statistically significant. The procedure involves calculating the standard error of the product of the relevant path coefficients and deriving the corresponding *z*-statistic. If the significance value associated with the mediating path is below the 5% threshold ($p < 0.05$), the mediation hypothesis is considered statistically supported. The formula is presented as follows:

$$Z = \frac{a \times b}{\sqrt{b^2 S_a^2 + a^2 S_b^2}} \quad (4)$$

Where *Z* denotes the Sobel test statistic, *a* denotes the coefficient of the effect of the independent variable (*X*) on the mediating variable, and *b* denotes the coefficient of the effect of the mediating variable (*Z*) on the dependent variable (*Y*). Furthermore, S_a indicates the standard error of coefficient *a*, while S_b represents the standard error of coefficient *b*.

RESULTS AND DISCUSSION

This study investigates the relationship between cultural capital, human capital, and regional economic development across 34 Indonesian provinces during the 2019–2023 period. Overall, the empirical findings indicate that cultural capital contributes positively to regional economic development, particularly through the Cultural Development Index (CDI) and Cultural Tourism (CT). The results further reveal that human capital,

measured by the Human Development Index (HDI), plays a significant mediating role in strengthening the contribution of cultural capital to economic development. However, not all dimensions of cultural capital generate direct economic effects. Cultural Tourist Attractions (CTA) and Intangible Cultural Heritage (ICH) do not show statistically significant effects on GRDP, suggesting that the economic contribution of cultural assets depends not only on their existence but also on their productive utilization, accessibility, and integration into regional economic activities

The descriptive statistical analysis of 170 observations covering 34 provinces during the 2019–2023 period, as presented in Table 2, reveals substantial variation in economic and cultural indicators. The results for each variable provide a general overview of public welfare levels and the intensity of cultural activities at the national level throughout the study period. Table 2 presents the descriptive statistics of the variables used in this study. Regional economic development, proxied by GRDP at constant prices, shows substantial variation across provinces during the observation period, indicating disparities in regional economic capacity and productivity. Provinces with stronger industrial structures, investment realization, tourism activity, and urban economic concentration tend to record higher GRDP values compared to less-developed regions. The variation also reflects differences in infrastructure availability, human capital quality, and the utilization of local economic resources across Indonesia's provinces.

Table 2. Results of Descriptive Analysis

Variable	Mean	Maximum	Minimum	Std.Dev
GRDP	3,76	22,94	-15,74	4,19
CDI	54,43	72,98	41,87	5,21
Cultural Tourism (%)	4,72	28,24	0,09	4,51
Cultural Tourist Attractions (%)	2,94	17,58	0,00	3,90
Intangible Cultural Heritage (%)	2,94	17,65	0,00	3,07
HDI	71,62	82,46	60,44	3,93

Source: Data processed (2026)

The CDI recorded a mean score of 54.43, with a range of 41.87 to 72.98, suggesting uneven levels of cultural development across provinces. Provinces such as Yogyakarta tended to achieve higher scores due to the successful integration of cultural preservation, tourism, and creative economic activities. Cultural tourism contributed an average of 4.72%, peaking at 28.24%, highlighting the dominant role of tourism-oriented provinces such as Bali. Similarly, cultural tourist attractions and intangible cultural heritage both recorded mean values of 2.94, indicating moderate but varied levels of cultural asset utilization and recognition across regions. Provinces such as Central Java were among the leading contributors through the effective management of heritage destinations and consistent preservation of intangible cultural assets.

Human capital, measured by the HDI, reported an average score of 71.62, with values ranging from 60.44 to 82.46. The highest score was achieved by Jakarta in 2023, reflecting stronger educational attainment, health services, and living standards relative to other provinces. Overall, the relatively high standard deviation values across several variables indicate persistent interregional disparities in economic, cultural, and human development. These findings suggest that strengthening region-specific development strategies based on local cultural assets and human capital enhancement remains essential for promoting more balanced and sustainable regional growth in Indonesia.

The appropriate panel data model was selected using the Chow Test, Hausman Test, and LM Test. As reported in Table 3, all probability values of the Chow Test were below 0.05, indicating that the FEM was preferred over CEM. The Hausman Test also produced significant results across all paths, confirming that FEM was more consistent than the REM. Accordingly, FEM was selected as the most appropriate estimation model for all equations.

Table 3. Model Feasibility Test Results

Test	Path		
	X → Y	X → Z	Z → Y
Chow Test (Prob > F)	0,0007	0,0000	0,0000
Hausman Test (Prob > Chi2)	0,0042	0,0018	0,0000
LM Test (Prob > Chibar2)	0,0000	0,0000	0,0000
Selected Model	FEM	FEM	FEM

Source: Data processed (2026)

Table 4. Multicollinearity Test

	CDI	CT	CTA	ICH	HDI
CDI	1,00000				
CT	0,44132	1,00000			
CTA	0,44063	0,35291	1,00000		
ICH	0,47474	0,29263	0,56583	1,00000	
HDI	0,64569	0,31657	0,46522	0,39263	1,00000

Source: Data processed (2026)

Table 5. Heteroskedasticity Test

Variable	Model 1	Model 2	
	X → Y	X → Z	Z → Y
CDI	0,1029	0,3290	0,7084
CT	0,2566	0,5980	0,9342
CTA	0,1725	0,2683	0,1857
ICH	0,4459	0,5632	0,0964
HDI	-	-	0,2178

Source: Data processed (2026)

The classical assumption tests further confirmed model validity. Table 4 shows that all correlation coefficients among explanatory variables were below the threshold of 0.85, indicating the absence of serious multicollinearity. In addition, the heteroscedasticity test results in Table 5 show that all p-values exceeded 0.05, indicating that the estimated models were free of heteroscedasticity.

Table 6. Model 1 Estimation Results

Variable	Coefficient	Sig.
C	-15,354	0,033
CDI	0,3058	0,018
CT	0,2367	0,015
CTA	0,5368	0,191
ICH	-0,0758	0,656

Source: Data processed (2026)

Table 6 presents the estimation results of Model 1, which examines the direct effect of cultural capital dimensions on regional economic development, proxied by GRDP. The results show that the Cultural Development Index (CDI) has a positive effect on GRDP, indicating that higher levels of cultural development are associated with stronger regional economic performance. Similarly, Cultural Tourism (CT) positively influences GRDP, suggesting that tourism activities based on cultural assets contribute to regional growth. In contrast, Cultural Tourist Attractions (CTA) have an insignificant coefficient, while Intangible Cultural Heritage (ICH) shows an insignificant effect. These findings imply that the economic contribution of cultural capital depends largely on how cultural resources are transformed into productive economic activities. The significant effect of CDI suggests that a stronger cultural ecosystem characterized by cultural participation, literacy, resilience, and creative economic activities can stimulate regional productivity and economic expansion. Likewise, the significant role of cultural tourism confirms that demand for tourism based on local culture generates multiplier effects through employment creation, local business development, and increased household income.

In contrast, the insignificant effect of CTA indicates that the availability of cultural tourism destinations alone is insufficient to stimulate regional economic development without effective management, accessibility, infrastructure, and visitor engagement. Similarly, the insignificant effect of ICH suggests that many forms of intangible cultural heritage in Indonesia remain socially and culturally valuable but have not yet been fully integrated into productive economic sectors that can generate measurable economic output. Capital directly generates economic gains.

Table 7 reports the estimation results of Model 2 across two paths. In the first path, the Cultural Development Index (CDI) and Cultural Tourism (CT) have positive effects on HDI. This indicates that stronger cultural development and tourism activities contribute

to higher human capital. In contrast, Cultural Tourist Attractions (CTA) and Intangible Cultural Heritage (ICH) do not show significant effects on HDI. In the second path, as shown in Model 3. HDI has a positive effect on GRDP, confirming the important role of human capital in regional economic development. Meanwhile, the direct effects of CDI, CT, CTA, and ICH on GRDP become statistically insignificant once HDI is included.

Table 7. Model 2 and 3 Estimation Results

X → Z			
Variable	Coefficient	Error	Sig.
C	64,121	1,3530	0,000
CDI	0,1361	0,0242	0,000
CT	0,0439	0,0182	0,017
CTA	-0,0151	0,0776	0,846
ICH	-0,0236	0,0323	0,465
Z → Y			
C	-121,883	28,787	0,000
CDI	0,0797	0,1350	0,556
CT	0,1636	0,0933	0,082
CTA	0,5617	0,3891	0,151
ICH	-0,0366	0,1621	0,822
HDI	1,6614	0,4363	0,002

Source: Data processed (2026)

Table 8. Model 2 Sobel Test

Variable	Z-value	Sig.
C	3,795	0,001
CDI	3,153	0,002
CT	2,037	0,042
CTA	-0,194	0,846
ICH	-0,719	0,472

Source: Quantpsy processed data, 2026

Table 8 presents the Sobel test results used to examine the mediating role of human capital measured by HDI in the relationship between cultural capital and regional economic development. The results indicate that the indirect effects of the CDI and CT on GRDP through HDI are positive and statistically significant, with *z*-values of 3.153 and 2.037, respectively. This finding suggests that human capital is an important transmission mechanism by which CD and CT enhance regional economic development. In contrast, CTA and ICH do not exhibit significant indirect effects, as their probability values exceed the 5% significance level. Therefore, these variables are not mediated by HDI in their influence on GRDP.

The mediation results indicate that human capital serves as an important transmission channel through which cultural capital contributes to regional economic development. This finding suggests that cultural values and tourism activities are more likely to generate sustainable economic outcomes when they enhance educational quality, public health, skills, and community capabilities. In other words, cultural capital does not automatically produce economic growth unless it is transformed into productive human resources. Provinces with stronger human development are better able to utilize cultural assets for innovation, entrepreneurship, tourism services, and creative economic activities, thereby strengthening regional economic performance.

Based on the previous analysis, the results indicate that cultural capital, as measured by the Cultural Development Index (CDI) and Cultural Tourism (CT), has a positive and significant effect on GRDP. This implies that provinces with higher CDI scores and greater levels of cultural tourism activity tend to generate higher regional income. These findings are consistent with earlier studies conducted by (Cui et al., 2024; Hale et al., 2023; Kostakis & Lolos, 2024; Zugravu-Soilita et al., 2021). The results suggest that culture functions not only as a source of social identity, but also as an economic asset capable of creating regional added value. The Cultural Development Index reflects the quality of the cultural ecosystem through dimensions such as cultural literacy, socio-cultural resilience, cultural expression, and the cultural economy. Improvements in these aspects can strengthen community productivity and stimulate the growth of creative industries. Meanwhile, cultural tourism can enhance economic activity through increased visitor expenditure, job creation, the development of local MSMEs, and rising investment in supporting sectors such as transport, accommodation, and food services. Therefore, provinces that can manage cultural assets productively and transform them into attractive tourism resources are more likely to achieve sustainable economic growth.

In this study, CT is measured based on actual tourist visits aimed at experiencing local culture, thereby reflecting real demand in the tourism sector. Accordingly, CT has a positive and significant effect on GRDP, as it directly generates economic activities through tourist expenditures, local consumption, and multiplier effects in supporting sectors such as accommodation, transportation, and MSMEs. On the other hand, CTA is measured by the number of available cultural tourism sites, representing the supply-side potential of cultural assets. The results indicate that the mere availability of cultural tourist attractions does not significantly contribute to GRDP unless accompanied by high visitation rates, effective destination management, and strong economic integration. Similarly, ICH does not show a significant effect on GRDP, as intangible cultural heritage such as traditions, performing arts, and local skills has not been fully commercialized or integrated into productive economic activities. As a result, its economic impact remains indirect and largely confined to social and cultural value rather than measurable economic output (Tan et al., 2023; Zhang et al., 2024).

The findings indicate that human capital plays a significant moderating role in the relationship between cultural capital and regional economic development. This suggests that cultural capital contributes more effectively to regional development when it is

translated into improvements in education, health, skills, and the overall standard of living of the local population. Based on these findings, this study recommends that government and policymakers continue to preserve and strengthen existing cultural capital within regions, as it can help increase regional income. In turn, higher regional income can support poverty reduction and enhance community welfare through job creation, reduced urban migration, improved access to public services, and more adequate living conditions. Ultimately, this approach can support sustainable economic growth.

These findings also extend previous studies on cultural economics and regional development. While earlier studies mainly focused on the direct contribution of cultural capital to economic performance (Kostakis & Lolos, 2024; Hale et al., 2023), this study demonstrates that the relationship operates indirectly through human capital development. The results support the argument of endogenous growth theory, which emphasizes that knowledge, education, and human capabilities are fundamental drivers of sustainable economic growth. In this context, cultural capital can strengthen regional development not merely as a tourism asset but also as a mechanism to enhance social learning, creativity, innovation, and community resilience.

Furthermore, the insignificant effects of CTA and ICH indicate that cultural preservation alone does not necessarily generate economic value unless supported by institutional capacity, market accessibility, and economic integration. This finding is consistent with Zhang et al. (2024) and Tan et al. (2023), who argue that cultural heritage contributes to economic performance only when effectively commercialized and connected to tourism networks, creative industries, and regional development policies. Therefore, this study contributes to the literature by highlighting the importance of integrating cultural preservation strategies with human capital development policies to achieve more inclusive and sustainable regional economic development.

CONCLUSION

The panel regression analysis across 34 provinces in Indonesia indicates that cultural capital, particularly the Cultural Development Index (CDI) and Cultural Tourism (CT), has a positive and significant effect on regional economic development proxied by GRDP. Furthermore, human capital plays a significant mediating role in strengthening the contribution of cultural capital to regional economic development. Local governments should not only focus on cultural preservation activities, but also encourage the development of creative industries, community-based cultural entrepreneurship, and cultural literacy programs that can generate sustainable economic value. Strengthening collaboration between cultural institutions, educational institutions, local communities, and the private sector is essential to ensure that cultural resources contribute more productively to regional development. Second, the significant role of cultural tourism suggests that policymakers need to improve the quality and accessibility of culture-based tourism destinations. This can be achieved through investment in tourism infrastructure, digital promotion, transportation access, destination management, and capacity building for local tourism actors and MSMEs. Provinces with strong cultural assets should also

integrate tourism development with local economic empowerment programs to maximize multiplier effects on employment and household income.

Third, the mediating role of human capital implies that cultural capital can only generate optimal economic outcomes when supported by improvements in education, health, and workforce capabilities. Therefore, public policies should prioritize human capital development through vocational training, cultural education, entrepreneurship programs, and skills development in the creative economy and tourism sectors. In particular, local governments should strengthen educational programs that incorporate local cultural knowledge and innovation to improve community competitiveness and adaptive capacity.

Finally, the insignificant effects of Cultural Tourist Attractions (CTA) and Intangible Cultural Heritage (ICH) indicate that the mere presence of cultural assets is insufficient to stimulate economic growth without proper economic integration and institutional support. Therefore, policymakers should focus on transforming cultural heritage into productive economic resources through better commercialization strategies, digitalization, festival development, creative industry incubation, and stronger linkages between cultural preservation and regional economic planning. Such strategies are expected to promote more inclusive and sustainable regional economic development across Indonesian provinces.

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