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Evaluating Citizen Participation: A Proposal for Multivariate Analysis of Its Potential and Obstacles From Development Interventions

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ABSTRACT

Citizen participation in public policy and development projects has gained critical importance, particularly in the context of international cooperation. This paper introduces the Citizen Participation Index (CitPI), a novel tool designed to measure the capacity of citizen participation to influence public policies effectively. The study employs field experiences from six countries (Brazil, Ecuador, El Salvador, Timor-Leste, Spain, and Vietnam) and applies quantitative multivariate analytical techniques, supported by extensive bibliographic and documentary research. The CitPI aims to offer actionable insights for enhancing participation and guiding policymakers. Findings indicate substantial disparities across countries, driven by socio-economic, cultural, and political variables. By providing a standardized measure, the CitPI demonstrates its potential to inform the design of more inclusive and effective development interventions.

JEL Classification: C10 econometric and statistical methods and methodology: general, F50 international relations, national security, and international political economy, general, H11 structure, scope, and performance of government, O1 economic development, R11 regional economic activity, Growth, development, environmental issues, and changes

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This research was developed within the framework of the doctoral thesis developed by Barbosa de Lima, Luciano (2015): *Evaluando la Participación Pública: Una Propuesta de Análisis Multivariante de sus Potencialidades y Obstáculos desde las Acciones Internacionales (Evaluating Public Participation: a proposal for multivariate analysis of their potential and obstacles from international interventions)*, directed by Professor Dr. Pablo Podadera Rivera. Unpublished doctoral thesis, Department of Applied Economics (Public Finance, Economic Policy and Political Economy), University of Malaga, Spain.

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1 | Introduction

Citizen participation is a fundamental element of public policy and development interventions, and it has received increasing emphasis from international cooperation agencies. Participation fosters improved poverty targeting, strengthens social capital, and promotes good governance (Mansuri and Rao 2013). However, the effectiveness of participation remains insufficiently analyzed, and the factors influencing it vary significantly across nations.

The primary objective of this study is to introduce the Citizen Participation Index (CitPI) as a novel tool to quantitatively evaluate citizen participation. The methodology for constructing the CitPI is derived from the comprehensive framework developed by Lima (2015). Building upon his multivariate approach to systematically analyze the factors influencing participation, the CitPI offers a comparative framework applicable across diverse governance contexts. This research addresses critical gaps in understanding the impact of participation on policy effectiveness, especially in underrepresented regions.

To achieve this, the study pursues the following specific objectives:

1. Identify and categorize key economic, political, and social factors influencing citizen participation.
2. Develop a robust methodological approach integrating multivariate statistical techniques, such as Principal Component Analysis (PCA) and regression models, to construct the CitPI.
3. Apply the CitPI framework across six countries—Brazil, Ecuador, El Salvador, Timor-Leste, Spain, and Vietnam—to compare participation levels in diverse governance contexts.
4. Analyze the strengths and limitations of the CitPI.
5. Provide insights into how policymakers and international organizations can utilize the CitPI to enhance participatory governance and inform policy decisions.

The CitPI was developed through extensive field research conducted in six countries—Brazil, Ecuador, El Salvador, Timor-Leste, Spain, and Vietnam—within the Strategic Socioeconomic Observatory (OSEST)¹ project, combined with a comprehensive review of literature and quantitative multivariate analysis. The inclusion of diverse political and economic contexts strengthens the robustness of the index, ensuring its applicability in varying governance structures.

The article is structured as follows: the theoretical framework reviews key participation concepts and gaps; the methodology outlines the index construction; results discuss findings across economic, political, and social dimensions; and conclusions provide implications for practice and policy.

2 | Theoretical and Conceptual Framework

Citizen participation in policymaking is essential for democratic governance. Foundational theories, such as Arnstein's (1969)

ladder of participation and Freire's (1970) "culture of silence," highlight the complexity of participatory practices. Modern scholarship emphasizes the role of participatory processes in bridging institutional gaps (Vedeld 2001; OECD 2005), extending beyond electoral processes to associative and deliberative forms that shape local governance (Brugué et al. 2003). Evaluating citizen participation presents methodological challenges, requiring the capture of both procedural aspects and policy outcomes (Falanga and Ferrão 2021). This complexity necessitates comprehensive assessment frameworks that consider institutional structures and socio-political conditions (Ballesteros 2014; Yoma 2024; Bundi and Pattyn 2023). The use of indicators to evaluate social and economic rights emphasizes the need for multidimensional approaches to capture complex realities (Pautassi 2010). The CitPI addresses this by integrating economic, political, and social dimensions to assess citizen participation across governance settings.

Recent studies have examined the digital transformation of citizen engagement (Peixoto and Fox 2016; Sæbø et al. 2008) and the impact of participatory budgeting and deliberative democracy on policy effectiveness (Fung 2006; Baiocchi and Ganuza 2016). The World Bank Group (WBG) has institutionalized citizen engagement in its development strategy (Hamad et al. 2014), with recent publications exploring technology, governance, and inclusivity (Diakite and Wandaogo 2024; Cuesta Leiva and Pecorari 2025). Despite its theoretical significance, empirical studies often lack robust frameworks for measuring participation; existing indices primarily focus on political representation, neglecting economic and social inclusion. The CitPI addresses this gap by integrating these dimensions, informed by fieldwork and quantitative analysis. With increasing attention on the coordination and coherence of development policies, participation is crucial for its direct impact on beneficiaries.

Within the theoretical and conceptual framework, previous publications consider participation an important factor in democracy. Authors like Gurr (1970), Bollen and Grandjean (1981); Bollen (1991), Bollen and Jackman (1985), Inkeles and Smith (1974); Inkeles (1991), Dahl (1971), Fukuyama et al. (2012), Lipset (1959, 1981), Merrit and Zinnes (1988), Verba and Nie (1972), and Smith (1969) have published on political democracy. The measurement of democratic participation has evolved, integrating behavioral and institutional dimensions (Coppedge et al. 2021; Norris 2011) and global democratic indices account for variations in participatory practices (Lührmann et al. 2018; Teorell et al. 2020). Inkeles (1991) compiled ideas and experiences in this field, with newer works refining these frameworks.

This article aims to analyze the evaluation of citizen participation. Vedeld (2001) argues that this assessment is difficult due to differing perceptions: participation is seen as intrinsically significant or as a tool for political, economic and social objectives (Vedeld 2001: 8). Converging these perspectives is challenging. Differing views on participation exist based on stakeholder position, institutional affiliation, and profession, such as between a poor male farmer and a female project manager. Participation in development policies can extend beyond encouraging commitment and supporting economic intervention. Participatory processes must consider contextual barriers that perpetuate isolation and lack of involvement. Illich (1969, in Oakley 1991, 3) states that underdevelopment

is a state of mind, and Freire (1970) described the “culture of silence” among the rural poor with no voice or participation in development.

Some authors have expressed skepticism toward the arguments for participation, suggesting they are merely popular whims. Midgley (1986, in Oakley 1991, 15) highlights the “emotionally appealing case for participation” and the need to address ethical issues between theory and practice, as emotional roles often overshadow practical aspects in participation initiatives. Uphoff (1986), in Oakley 1991 refers to “pseudo participation,” where participation is more virtual than real, with rhetoric exceeding practical changes.

Citizen participation has diverse meanings, from complementing political representation to citizen intervention in public management. This includes program/project design and implementation, and major development plans (Ferrero et al. 2014). This work focuses on the latter, within the realm of management (Cunill Grau 1991) or cooperative activities (Verba and Nie 1972), extending beyond political or ‘electoral’ participation (Torcal et al. 2003). It addresses degrees of participation that combine legitimacy and efficiency (top-down) with inclusion and empowerment (bottom-up), toward “effective and genuine participation” (Arnstein 1969, in Ferrero et al. 2014) to measure participatory capacity in local development planning (Klinsberg 2000). Arnstein’s “ladder of citizen participation” (Arnstein 1969) includes degrees of tokenism (informing, consultation, and placation).

Consequently, there is a need to measure the potential and efficiency of participatory policies (coordination and coherence interventions, policy cycle activities). Regarding initiative evaluation, there is an imbalance between government investment in citizen engagement and evaluation of its effectiveness and impact (OECD 2005), which also occurs in other development institutions. Mansuri and Rao (2013) state that project design lacks appreciation of context, and inflexible rules fail to internalize the complexity of engaging with civic-led development. Addressing these problems is essential for participatory development projects to create political and ethical awareness.

Emerging technologies have facilitated instruments that enhance citizen participation and evaluation potential by reducing costs and increasing accessibility. While technology in development policies is growing and showing potential, “every approach and technology has opportunities and pitfalls” (World Bank 2016). Participation is linked to power and influence, and participatory policy evaluation is recent with few studies. The OECD (2005: 10–11) notes that public engagement in policy-making is recent, and citizen participation evaluation is in its infancy.

To evaluate participation, this study considers citizen participation in international cooperation, operationally defined as a process of citizen intervention in external collaboration to strengthen/transform the current management system, increasing the collaboration’s impact on local development. Operationally, citizen participation is conceptualized from measurable components that influence it.

To support the reader’s understanding, the following diagram presents the conceptual and methodological framework adopted in this study, integrating the theoretical foundation, identified research gaps, proposed innovation, and methodological steps (see Figure 1).

3 | Methodological Aspects of the Study

Citizen participation is influenced by a range of interrelated factors that shape individuals’ willingness and capacity to engage in decision-making processes. As detailed by Lima (2015), to systematically assess these influences, the study employs a structured approach that identifies key determinants of participation, categorizes them into broader dimensions, and integrates them into a comprehensive analytical framework, acknowledging the heterogeneity inherent in socio-economic data (Heckman 2001). The following section details the identification of participation components, the construction of an indicator system, and the methodology used to develop the synthetic index of citizen participation.

3.1 | Identification of Components That Influence the Desire of Citizens in the Participation

The study identified nine key components influencing participation (see Figure 2): education, economic development and dependencies, political system and freedom, field of action, the history of crises and conflicts, gender dynamics, culture and linguistic factors, administrative transparency and institutional integration, and communication, information, and infrastructure services. These components were categorized into economic, political, and social dimensions, ensuring comprehensive coverage of participation drivers. The approach aligns with multi-criteria evaluation methods (Munda 2003).

The population’s education level contributes to understanding the degree of concentration or dispersion of effective decision-making and influencing capacities, particularly in more strategic processes of action.

Meanwhile, conditions for economic development and dependency affect the capacity for involvement in political life. The time for political involvement can conflict with the time dedicated to providing food for their family or community. Furthermore, the capacity to challenge ideas may be limited when “more powerful” individuals are present at the negotiation table.

The political system and guarantee of freedom are decisive to build the conditions for participation. In this sense, the existence of clear legislation of state and government division of powers, as well as a system to support political and social freedom, is essential.

The existence of unleashed crises and conflicts results in significant instability. This instability, the insecurity and the feeling of being at risk when people are still young, becomes a determining factor inhibiting free participation in the public arena.

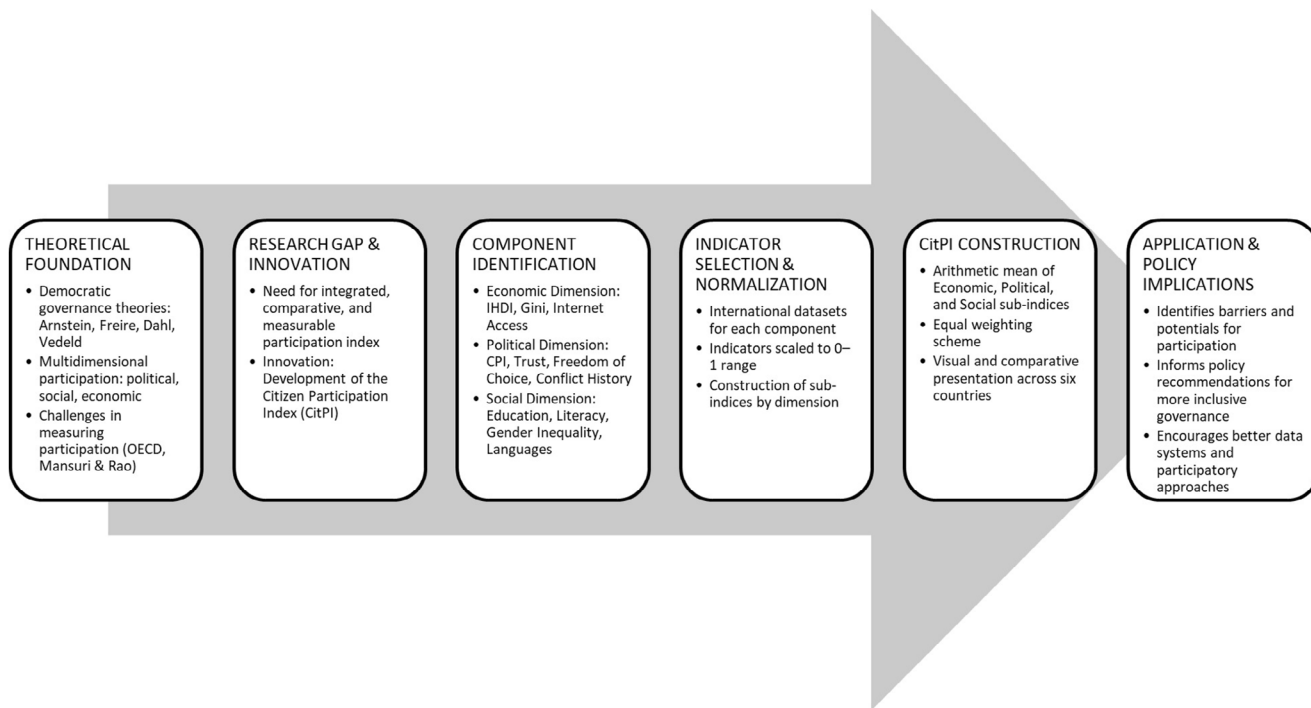


FIGURE 1 | Integrated framework for evaluating citizen participation: the citizen participation index (CitPI). Source: authors' work.

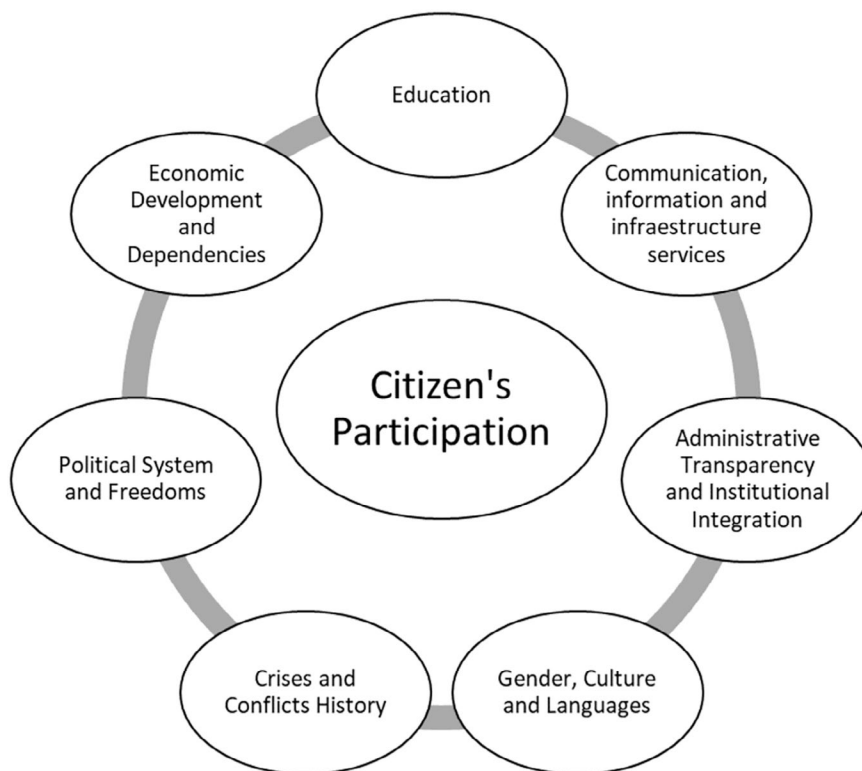


FIGURE 2 | Citizen participation components. Source: authors' work.

Cultural, gender, and linguistic differences can also present a significant obstacle, creating communication barriers and increasing detachment from decision-making processes.

Administrative transparency and institutional integration, including the public administration's openness and information

availability, are important steps for the government reform toward promoting citizen's participation. Nevertheless, perceptions of transparency and the effectiveness of institutional integration can vary between different actors, such as civil society organizations and government (Ruvalcaba-Gomez and Renteria 2020).

Despite this variation in perception, adequate access to communication, information, and infrastructure services remains necessary for the effective accessibility of information provided by the public administration.

3.2 | Indicator System's Construction

Following the identification of variables influencing citizen participation, indicators were selected based on the criteria defined by Lima (2015), which emphasizes their availability, relevance, and reliability, prioritizing datasets from international organizations. For example, the Inequality-adjusted Human Development Index (IHDI) and Gini coefficients were used to represent economic disparities, while the Corruption Perception Index and freedom of choice indicators captured political contexts.

The research identified a significant lack of reliable and accessible statistical data in the countries studied. Therefore, recognizing the difficulty of accessing data in less developed countries, this study sought to use relevant indicators, largely produced by international organizations, which provide homogeneous and frequently generated data across different countries.

3.3 | The Consolidated Proposal of Citizen Participation Indicators, Its Justifications and Calculation Reports

The indicators were divided into three categories: economic indicators (EI), political indicators (PI) and social indicators (SI), in order to facilitate their visualization and systematization.

Also, the indicators were ultimately tested for proposing calculation reports that converted their original values into a value between 0 and 1 and, thus, worked with the data for the construction of the Citizen Participation Index (see Table 1).

This list of issues convertible to indicators may undergo constant revisions, with the aim of aligning it more closely with each studied context. However, as a method of rationalization, the limitations in representing the full complexity of reality in the analyzed regions have been considered.

3.4 | Synthetic Index of Citizen Participation

Within a multivariate framework, indicators were normalized on a 0–1 scale. A synthetic index was developed by calculating the arithmetic mean of dimension-specific indices, assigning equal weights to economic, political, and social dimensions. This approach facilitates cross-country comparisons while accounting for contextual variations, addressing the challenge of measuring intangible factors across diverse settings (Hubbard 2007).

Marcos Castro and Pablo Podadera (2013: 347, own translation) stated that “facing decision-making, it is useful to manage a

single measure that summarizes the information considered”. Figure 3 illustrates the process of creating indices, which begins with the measurements and indicators comprising the indicator system, culminating in the index through a systematic method.

The purpose of constructing the index is to provide a tool that enhances the visibility of the potential and problems of citizen participation. The construction of the index or synthetic indicator in this study aims to measure the degree of progress toward increasing citizen participation in public decision-making processes, using a common numerical value that integrates the different indicators.

4 | Key Results of the Study and Discussion: Applying the Proposed Methodology for the Index

The Citizen Participation Index (CitPI) was developed using indicators reflecting contexts with relevant and justified relationships to participation, systematically produced and internationally recognized, particularly by international organizations.

We will see below more details about the results related to the indicators, the indices of economic, political, and social dimensions, and the Citizen Participation Index.

4.1 | The Construction of the Economic, Political and Social Indexes

Initially, the economic, social, and political indices were calculated using the arithmetic mean of the converted indicators. The results of the index calculations, which form the basis for constructing the Citizen Participation Index, are presented below.

The data for the indicators used in the methodology were collected from the sources and years indicated in Table 1 and were subsequently applied to the four countries within the Socioeconomic Observatory Strategic project (Ecuador, El Salvador, Vietnam and East Timor), as well as Spain and Brazil. The last two were used to expand the sample of the statistical test and are well known to the researchers.

4.2 | Indicators of the Economic Index

The Economic Index revealed substantial disparities. Spain exhibited the highest HDI scores and internet penetration, reflecting its developed infrastructure. In contrast, East Timor faced substantial challenges, with low HDI and limited internet access, hindering participatory potential.

Figure 4 demonstrates the analysis of the indicators considered for the Economic Index.

4.2.1 | Inequality-Adjusted Human Development Index (IHDI)

East Timor, followed by El Salvador, had the lowest Inequality-adjusted Human Development Index (IHDI) values. Spain stands

TABLE 1 | Proposed indicators for measuring citizen participation.

Component	Indicator and measurement scale
Economic indicator (EI) Development and Inequality	1. EI.1. Inequality-adjusted Human Development Index (IHDI) Calculation report: The original value is used directly from the source. There was no calculation, as the original value is already between 0 and 1. Source of verification: United Nations Organization (2024): <i>Human Development Report 2023–2024. Breaking the gridlock: Remaining cooperation in a polarized world.</i>
Economic indicator (EI) Economic Development and Dependencies	2. EI.2. Gini coefficient (income and expenditure inequality) Calculation report: The highest value of the coefficient will be considered 1 (maximum) and the lowest 0.4 (minimum), indicating that, despite the differences, it is not possible to have no participation when there is much inequality. The other values were calculated in this range. In the case of 2025, data from the 2023–2024 report (which owns HDI data 2010–2022) are used as a basis: <i>Minimum value: Slovakia 23.2</i> <i>Maximum Value: South Africa 63.0</i> <i>Formula: $[(63-x) * \mu] + 0.4$</i> $\mu = (1-0.4) * 0.1 / (\text{maximum value} - \text{minimum value})$ $\mu = (1-0.4) * 0.1 / (63.0 - 23.2) = 0.0151$ $\mu = 0.0151 \text{ in } 2010-2022.$ Source of verification: United Nations Organization (2024): <i>Human Development Report 2023–2024. Breaking the gridlock: Remaining cooperation in a polarized world.</i>
Economic indicator (EI) Internet access	3. EI.3. Internet users (% of the population) Calculation report: Original value, which is in percentage, divided by 100. Source of verification: United Nations Organization (2024): <i>Human Development Report 2023–2024. Breaking the gridlock: Remaining cooperation in a polarized world</i> , full database. Excel file.
Political indicator (PI) Administrative Transparency and institutional integration	4. PI.1. Corruption Perception Index (International Transparency) Calculation report: Logarithm Base 10 (ten) subtracted from 1 (one) of the original values of the international organization, up to 3 (three) decimals. Source of verification: Transparency International (2024): <i>Corruption Perceptions Index 2023.</i>
Political indicator (PI) Trust in others	5. PI.2. Trust in others (% answering that trust) ² Calculation report: The highest value of the original indicator will be considered 1 (maximum) and lowest 0.2 (minimum), indicating that, despite the lack of confidence, there may be 20% of involvement in public decisions, motivated by self-interest. Other data are calculated in this range for the CitPI 2015 (2009–2011 data): <i>Maximum value (Vmax): Denmark 60</i> <i>Minimum value (Vmin) Lebanon and Albania 7</i> <i>HDI formula: $x - Vmin / VMax - Vmin$</i> Source of verification: Gallup (2015) <i>apud</i> United Nations Organization (2024).
Political indicator (PI) Freedom of choice	6. PI.3. Freedom of choice (% satisfied) ³ Calculation report: Original value, which is in percentage, divided by 100. Source of verification: Gallup (2015) <i>apud</i> United Nations Organization (2024).
Political indicator (PI) Conflict and crises history	7. PI.4. Historical presence (yes or no) of relevant crisis and/or conflict and temporal distance Calculation memory: When considering the generation change would be 15 years, it is considered that an interval of 15 years without conflict would reduce by half the feeling of conflict, instability or absence of peace, which would allow a better commitment to citizen participation and building development. More than 30 years would obtain the maximum score of 1. Source of verification: Own elaboration based on the adaptation of different sources of historical information from countries, such as Central Intelligence Agency (2025): <i>The World Factbook.</i>

(Continues)

TABLE 1 | (Continued)

Component	Indicator and measurement scale
Social indicator (SI) Education	8. SI.1. Population with at least some secondary education (%) ⁴ Calculation report: The arithmetic mean of the female and male percentage values, converted to a decimal by division by 100. Source of verification: UNESCO Institute for Statistics (2023) <i>apud</i> United Nations Organization (2024).
	9. SI.2. Adult literacy rate (%) (HDI/UNDP) Calculation report: Original value, which is in percentage, divided by 100. Source of verification: UNESCO Institute for Statistics (UIS). <i>UIS.Stat Bulk Data Download Service</i> . Accessed February 27, 2025. https://apiportal.uis.unesco.org/bdds .
Social indicator (SI) Languages and cultures	10. SI.3. Number of languages/population and differences in percentage of speakers of each language (statistics aspects to be adapted and detailed) Calculation report: If the number of languages is above 10, you receive a score 0.5, indicating that up to at least 50% of its population would have difficulty for participation (expression, dialog etc.). Therefore, besides being an indicator of linguistic differences, it is also related to cultural differences. It is calculated as follows: $> 10 \text{ languages} = 0.5$ $9 > \text{Idiom} > 6 = 0.6$ $5 > \text{Idiom} > 3 = 0.7$ $\text{Idiom} = 2 = 0.8$ $1 \text{ idiom} = 1$ Source of verification: Relevant references of country history and culture. In summary, it is possible to find the convergence of these data in the CIA World Factbook. Central Intelligence Agency (2025): The World Factbook was used for this study.
Social indicator (SI) Gender	11. SI.4. Gender Inequality Index (GII) Calculation report: The original value is used directly from the source. There was no calculation, as it is already between 0 and 1. Source of verification: United Nations Organization (2024): <i>Human Development Report 2023–2024. Breaking the gridlock: Remaining cooperation in a polarized world</i> .

Note: Authors' work.

out significantly from the others in terms of the IHDI, reflecting the variation in the level of human development between countries.

4.2.2 | Gini Coefficient (Income and Expenditure Inequality)

The Gini coefficient values for the countries studied between 2010 and 2022 indicate that Brazil, Ecuador, and El Salvador exhibit the highest rates of income inequality.

East Timor, Spain, and Vietnam have demonstrated lower income inequality among their populations. However, it should be noted that the coefficient reflects only income differences and not the general income level of the population.

Addressing income inequality, as indicated by the Gini coefficient, is crucial for fostering a more inclusive environment for citizen participation. Economic policies aimed at reducing disparities, as well as policies designed to mitigate the effects of economic crisis (Podadera 2012), should be considered as part of a broader strategy to enhance citizen engagement.

4.2.3 | Internet Users

The data, initially in percentage format and converted to a 0–1 scale, reveal a considerable difference in internet access among the populations of the countries studied.

The disparity in internet access between Spain and East Timor underscores a profound inequality. Currently, Spain boasts a 94.5% internet penetration rate, while East Timor lags significantly behind at 40.8%. However, this gap has narrowed significantly; in 2012, Spain's rate was 72%, compared to only 0.9% in East Timor, indicating substantial growth in the latter.

The challenges of internet access in East Timor were evident during field research. The monopoly on internet provision and the prices charged in East Timor present a major obstacle to internet access by the Timorese population, which has a limited income to afford such services.

Limited internet access for both the public and public administrators hinders effective transparency, information access, communication, and the exchange of experiences and knowledge.

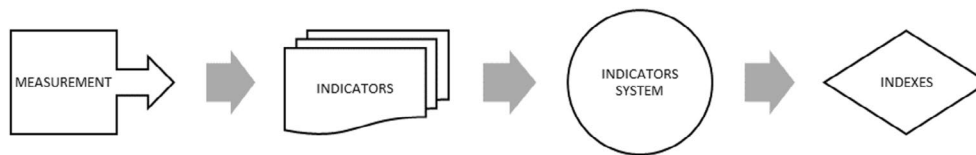


FIGURE 3 | Construction of an index or systemic indicator. Source: adapted from Castro Bonaño, Juan Marcos and Podadera Rivera, Pablo (2013: 348).

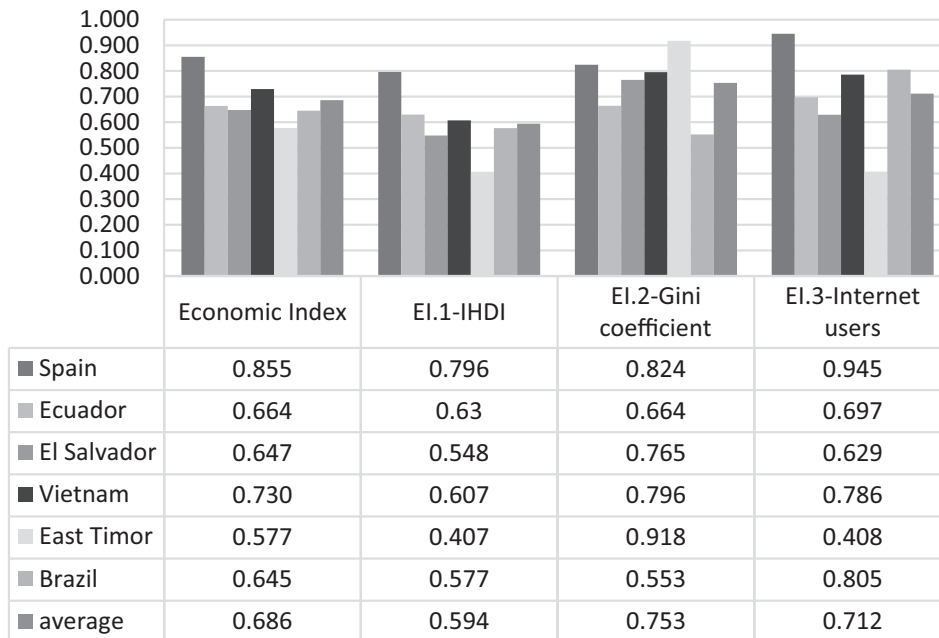


FIGURE 4 | Economic indicators and their application. Source: IHDI: United Nations Organization (2024). Human Development Report 2023–2024. Breaking the gridlock: Remaining cooperation in a polarized world, full database. Excel file. Gini coefficient: United Nations Organization (2024). Human Development Report 2023–2024. Breaking the gridlock: Remaining cooperation in a polarized world, full database. Excel file. Internet users: United Nations Organization (2024). Human Development Report 2023–2024. Breaking the gridlock: Remaining cooperation in a polarized world, full database. Excel file.

Among the countries studied, Spain demonstrates a significantly high level of internet penetration, exceeding 90% in 2024. Furthermore, data indicate that Spain had already achieved over 50% internet penetration in 2012.

4.3 | Indicators of the Political Index

The Political Index revealed trust and freedom as key drivers of participation. Across the studied nations, Spain, East Timor, and Vietnam exhibited high corruption perception scores. Notably, Spain and Vietnam also demonstrated strong freedom of choice. Conversely, Ecuador and East Timor faced challenges stemming from historical conflicts. Furthermore, Ecuador and Brazil reported low levels of public trust.

The indicators selected to compose the Political Index are PI.1. Corruption Perception Index (Transparency International); PI.2. Trust in others; PI.3. Freedom of choice; and PI.4. Historical presence of relevant conflicts and temporal distance.

The Figure 5 presents the indicators and values considered for the Political Index.

While the data on “Trust in others” and “Freedom of choice” are from 2013 (Gallup 2015, as cited in United Nations Organization 2024), and more recent information was not available, these indicators remain highly relevant due to their deep cultural roots and their relative stability over time. Mutual trust and perceived freedom of choice are strongly tied to long-standing social values and political structures, which evolve gradually and reflect persistent societal norms. Therefore, despite the lack of updated data, the inclusion of these indicators remains crucial for understanding the political environment and its influence on citizen participation.

4.3.1 | Corruption Perceptions Index

Whereas the higher the original value of the Corruption Perception Index, the lower the perception of corruption, the original data from Transparency International indicate the following: Spain 60, Ecuador 34, El Salvador 31, Vietnam 41, East Timor 43, and Brazil 36.

When converting the data with the application of the log base 10 transformation, it was corrected with the intention of

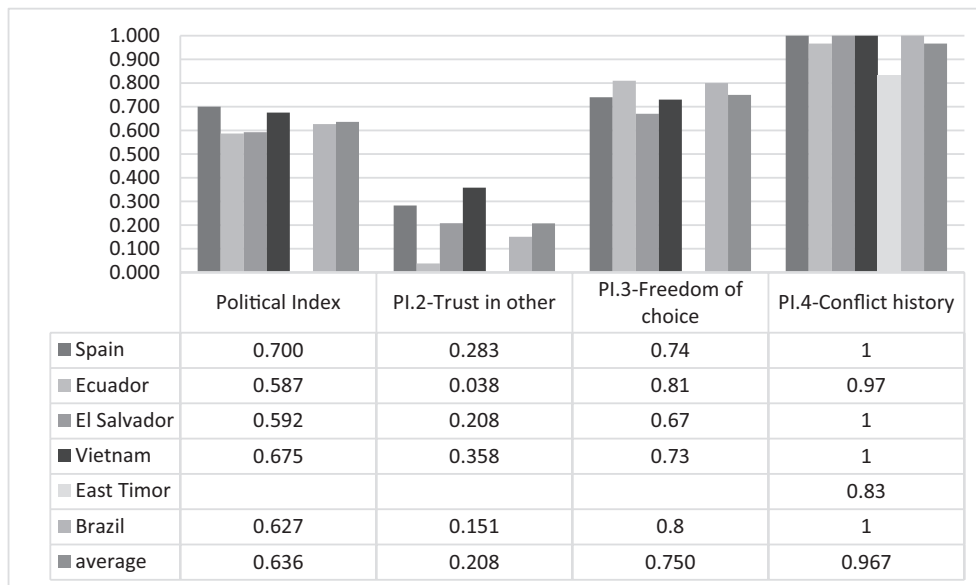


FIGURE 5 | Political indicators and their application. Source: Corruption Perception Index: Transparency International (2024). Trust in others: Gallup (2015) apud United Nations Organization (2024), full database. Excel archive. Freedom choice: Gallup (2015) apud United Nations Organization (2024), full database. Excel archive. Historical Conflict: Own elaboration.

anticipating possible impacts of extreme values and asymmetries. (Field 2009: 100–101).

With the converted values, we can conclude that, when the value of the variable Corruption Perceptions Index is higher, the corruption perception is lower and so the population may be more interested in participating in public decisions, and then the Citizen Participation Index will be higher.

El Salvador, Ecuador, and Brazil have the lowest values; thus, the perception of corruption is higher in those countries. The best result was Spain.

4.3.2 | Trust in Others

According to Dahl (1971: 150–152), “mutual trust favors polyarchy and public contestation while extreme distrust favors hegemony.” The author details the three modes that mutual trust favors polyarchy: (1) polyarchy requires mutual communication and the two-way communication is blocked between people who do not trust each other; (2) a certain level of mutual trust is necessary for people to meet freely to promote their objectives; organizations based in command, with a top-down power authority, may be possible (though not necessarily efficient) with mutual distrust, but organizations based on mutual influence are difficult to establish and maintain in an atmosphere of mistrust; and (3) conflicts are more threatening for people who distrust each other; public contestation requires a dose of confidence in the adversary, because they can be adversaries but not relentless enemies; for example, at government level, trust is important to ensure that the group in power will not benefit from the lack of constitutional branches of government restrictions, because doing so would not be a violation of the law but of trust.

Therefore, the factor “trust in others” is very important for social cohesion and, above all, for decision making at the local and national levels. The original data (Gallup 2015, as cited in United Nations Organization 2024), which consider the percentage of the population that claims to trust other people, is as follows: Spain 22%, Ecuador 9%, El Salvador 18%, Vietnam 26% and Brazil 15%. No data for East Timor.

4.3.3 | Freedom of Choice

This indicator reflects satisfaction with freedom of choice, as measured by the Gallup World Poll (Gallup 2015). The data represents the proportion of respondents expressing satisfaction with their freedom of choice, with the following results: Spain (74%), Ecuador (81%), El Salvador (67%), Vietnam (73%), and Brazil (80%). Data for East Timor was unavailable. The original percentages were converted to proportions by dividing by 100.

4.3.4 | Historical Presence of Relevant Conflicts and Its Temporal Distance

Drawing on the theoretical premise that the temporal distance from conflict fosters increased public participation, this study introduced a unique indicator to measure this relationship.

Adopting a 15-year generational interval, this study proposes that each 15-year period without conflict reduces the perceived legacy of conflict, instability, or lack of peace by 50%, facilitating greater citizen engagement and development. A period of 30 years or more receives a score of 1.

Table 2 outlines the conflict events used for temporal distance calculations, with 2024 as the baseline.

TABLE 2 | Historical events considered for calculating the temporal distance to conflicts.

Country	Event	Calculation report and results of years until 2012
Spain	Spanish Civil War (1936–1939)	$(2024-1939)/30 = 2.8333$ Score: 1
Ecuador	Ecuador-Peru Boundary Dispute, occurring from the nineteenth century; finished in 1998 with the Peace Treaty signed in Brasilia. The last armed conflict was the Cenepa War in 1995.	$(2024-1995)/30 = 0.9666$ Score: 0.97
El Salvador	The Civil War in El Salvador (1980–1992). Conflict between the revolutionary forces of the Farabundo Marti National Liberation Front (FMLN) (supported directly by Nicaragua and indirectly by Cuba and the Soviet Union) and the government of El Salvador (supported directly by the United States). Intended with the 1992 Peace Treaty.	$(2024-1992)/30 = 1.0666$ Score: 1
Vietnam	Vietnam War (ended in 1975).	$(2024-1975)/30 = 1.6333$ Score: 1
East Timor	After successive conflicts over the independence of East Timor, as of 1975, the latest slaughter occurred in 1999, when the Timorese population voted for the country independence through a referendum promoted by the United Nations Organization.	$(2024-1999)/30 = 0.8333$ Score: 0.83
Brazil	Constitutionalist Revolution (1932)	$(2024-1932)/30 = 3.066667$ Score: 1

Note: Authors' work.

4.4 | The Political Index Based on the Component Indicators

The Political Index, calculated as the arithmetic mean of component indicators, revealed closely grouped averages for Spain (0.700), Vietnam (0.675), and Brazil (0.627).

El Salvador (0.592) and Ecuador (0.587) presented the lowest index scores, with Ecuador's particularly low score attributed to a significant deficit in trust in others.

Due to missing data for East Timor in two key indicators, PI.2 (Trust in other people) and PI.3 (Freedom of choice), its Political Index could not be calculated. However, the country's recent conflict (1999) is expected to negatively influence its Citizen Participation Index (CitPI).

4.5 | Indicators of the Social Index

Social factors, including education and gender inequality, emerged as significant barriers for participation. Notably, Vietnam's high literacy rates contrasted with East Timor's linguistic diversity, which complicated communication and inclusivity.

The Social Index was constructed using the following indicators: SI.1. Population with at least some secondary education; SI.2. Adult literacy rate; SI.3. Gender Inequality Index; and SI.4. Number of languages. Figure 6 presents the selected indicators with their respective converted values.

4.5.1 | Population With at Least Some Secondary Education (% Ages 25 and Older)

According to the Human Development Report 2023–2024, the percentage of the population aged 25 and older with at least some secondary education is as follows: Spain (80.8%), Ecuador (54.1%), El Salvador (66.2%), Vietnam (65.5%), East Timor (47%), and Brazil (36.6%). These percentages were converted to proportions within a 0 to 1 range for analysis. Notably, Brazil and East Timor exhibited the lowest proportions for this indicator, with Brazil at 36.6% and East Timor at 47%. While Ecuador and El Salvador are Latin American countries, Brazil had the lowest value of all countries studied.

4.5.2 | Adult Literacy Rate

The adult literacy rates, presented as proportions, are as follows: Spain (0.947), Ecuador (0.940), El Salvador (0.990), Vietnam (0.900), East Timor (0.699), and Brazil (0.960). As the data confirms, most studied countries exhibit high literacy rates, generally above 90%.

East Timor stands out with a significantly lower literacy rate of 69.9%, falling below the 70% threshold.

4.5.3 | Gender Inequality Index

The Gender Inequality Index (GII), as featured in recent United Nations Human Development Reports (HDR), measures

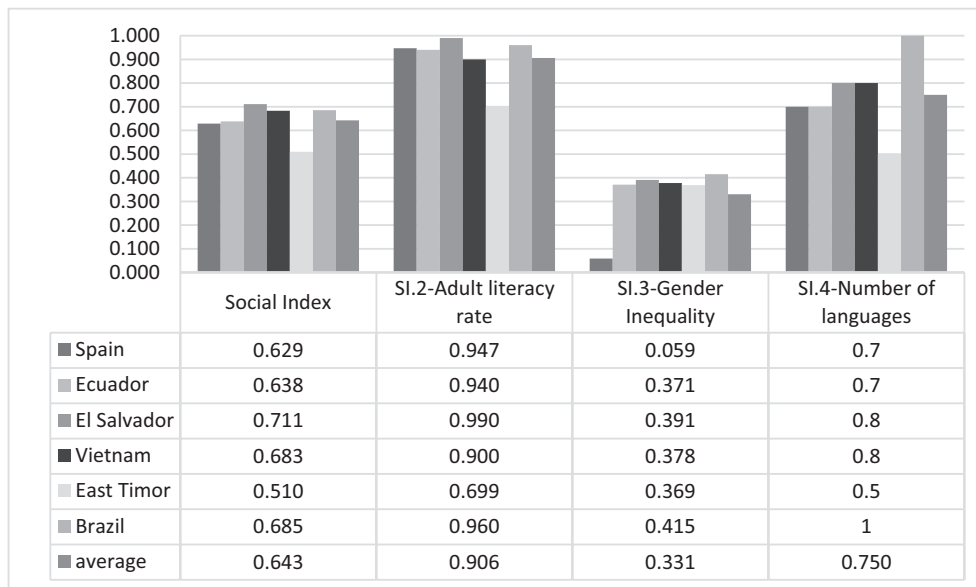


FIGURE 6 | Social indicators and their application. Source: SI.1 Secondary Education: UNESCO Institute for Statistics (2023) apud United Nations Organization (2024). SI.2 Adult literacy rate: UNESCO Institute for Statistics (UIS). UIS.Stat Bulk Data Download Service. Accessed February 27, 2025. <https://apiportal.uis.unesco.org/bdds>. SI.3 Gender Inequality Index: Calculated based on data from United Nations Organization (2024). Human Development Report 2023–2024. Breaking the gridlock: Remaining cooperation in a polarized world. SI.4 Number of languages: Own elaboration based on the CIA World Factbook 2014 database.

disparities in human development between women and men. It utilizes the same foundational dimensions as the Human Development Index (HDI): life expectancy, health, education, and quality of life.

The GII scores for the studied countries are as follows: Spain (0.059), Ecuador (0.371), El Salvador (0.391), Vietnam (0.378), East Timor (0.369), and Brazil (0.415). Spain exhibits a notably lower GII, indicating less gender inequality, while Brazil presents the highest GII among the studied countries.

4.5.4 | Number of Languages

This study introduces an innovative approach to calculating the impact of linguistic diversity. It posits that a higher number of languages within a country correlates with increased cultural distance among its population, leading to communication barriers and reduced equitable participation.

Linguistic diversity can impede communication when the language of negotiation differs from the native languages of participants, potentially resulting in disparities in the ability to articulate ideas and arguments.

A preliminary linguistic analysis was conducted for each country, and data on language counts was systematically collected from the CIA World Factbook (Central Intelligence Agency 2025). The results are presented in Table 3.

East Timor's compelling linguistic diversity served as a key impetus for including the number of languages as a variable within the Citizen Participation Index. This decision was substantiated by the understanding that linguistic diversity acts

as a significant impediment to social interaction and integration in the country. The contemporary relevance of local language preservation in East Timor is extensively documented in Geoffrey Hull's (2001) *Timor Lorosae—Identidade, Lian Política no Edukasionál*.

Table 4 provides a comprehensive overview of the indicators, indices, and their converted values.

4.6 | Construction of the Citizen Participation Index Based on Economic, Political and Social Indexes

The Citizen Participation Index (CitPI), designed to assess cross-dimensional potentials for participation, revealed significant variations among the countries studied. Spain achieved the highest CitPI score (0.728), attributed to its balanced performance across economic (0.855), political (0.700), and social (0.629) dimensions. Conversely, East Timor's CitPI could not be calculated due to missing data in the political index; however, its economic (0.577) and social (0.510) indices indicate significant challenges.

The case of Timor-Leste warrants further discussion. While the economic and social indices provide some insight, the absence of a complete CitPI score due to missing data highlights critical limitations in the available data for this country. This lack of data is not merely a methodological issue; it also reflects the reality of governance and information systems in post-conflict and developing nations, such as limited survey capacity, cultural sensitivities around expressing political opinions, and the fluidity of the political landscape. Increased investment in data collection initiatives, capacity building for local researchers, and the development of culturally appropriate measurement tools are essential steps toward a more comprehensive understanding

TABLE 3 | Languages considered for the calculation by country.

Country	Linguistic context in each country	Number of languages considered and the value for the index
Spain	Castilian Spanish (official) 74%, Catalan (official in Catalonia, the Balearic Islands, and the Valencian Community) 17%, Galician (official in Galicia) 7%, Basque (official in the Basque Country and Navarre) 2%, Aranese (official in part of Catalonia) < 5000 speakers Note: Aragonese, Aranese Asturian, Calo, and Valencian are also recognized as regional languages	Four (4) official languages were accounted: Castilian, Catalan, Galician and Basque.
Ecuador	Spanish (Castilian; official) 98.6%, indigenous 3.9% (Quechua 3.2%, other indigenous 0.7%), foreign 2.8%, other 0.6% (includes Ecuadorian sign language) (2022 est.) Note 1: shares sum to more than 100% because some respondents gave more than one answer on the census Note 2: Quechua and Shuar are official languages of intercultural relations; other indigenous languages are in official use by indigenous peoples in the areas they inhabit	Three (3) languages were accounted: Spanish, Quechua and other indigenous and foreign languages, considering the importance of the latter for part of the population's everyday life.
El Salvador	Spanish (official), Nawat (among some indigenous)	Two (2) languages were considered, taking into account the importance of Amerindian languages for a significant part of the population.
Vietnam	Vietnamese (official); English (often as a second language); some French, Chinese, and Khmer; mountain-area languages (including Mon-Khmer and Malayo-Polynesian)	Based on field experience, only two (2) groups of relevant local languages were accounted: Vietnamese and Khmer.
East Timor	Tetun Prasa 30.6%, Mambai 16.6%, Makasai 10.5%, Tetun Terik 6.1%, Baikenu 5.9%, Kemak 5.8%, Bunak 5.5%, Tokodede 4%, Fataluku 3.5%, Waima'a 1.8%, Galoli 1.4%, Naueti 1.4%, Idate 1.2%, Midiki 1.2%, other 4.5% (2015 est.) Note: data represent population by mother tongue; Tetun and Portuguese are official languages; Indonesian and English are working languages; there are about 32 indigenous languages	Twenty (20) languages were considered, since there are people who do not speak another language other than theirs, which is usually an indigenous language.
Brazil	Portuguese (official and most widely spoken language); fewer common languages include Spanish (border areas and schools), German, Italian, Japanese, English, and many minor Amerindian languages	Despite a variety of languages, the proportion of Amerindians and foreign languages is very small compared to the extended use of Portuguese. Therefore, were considered just one (1) language, the Brazilian Portuguese.

Note: Adaptation from Central Intelligence Agency (2025): *The World Factbook*. Adaptations for the information on the languages of each country.

of citizen participation in Timor-Leste and other post-conflict countries.

The CitPI was constructed as the arithmetic mean of the economic, political, and social indices, each contributing equally (one-third) to the overall score. The social and political indices each comprise four indicators, while the economic index comprises three. Consequently, each social and political indicator represents 8.33% of the CitPI, and each economic indicator represents 11.11% (Figure 7).

Analysis of the index scores reveals that the social index generally yielded the highest values across the studied countries. Except for Ecuador, which had its lowest value in the political index (0.587), the remaining countries exhibited their lowest values in the economic dimension.

While East Timor lacked sufficient data for full CitPI calculation, its inclusion highlights the importance of data availability for comparative studies. The challenges encountered underscore the necessity for continuous, reliable, and systematic data collection.

To ensure robustness, the CitPI was also calculated using the arithmetic mean of individual indicators. This alternative calculation yielded minor variations in absolute values but did not alter the relative rankings of the countries.

4.7 | Validity and Reliability Testing

The Index was developed with 11 indicators, divided into three dimensions: economic, political, and social. These are indicators with proven relevance to the reality of public participation,

TABLE 4 | Citizen participation index (CitPI) of the studied countries.

Country	Citizen participation index (CitPI)	Economic index	EI.1 IHDI	EI.2 Gini coefficient	EI.3 Internet users	Political index	PI.1 Corruption perception	PI.2 Trust in others	PI.3 Freedom of choice	PI.4 Conflict History	Social Index	SI.2		SI.3 Gender inequality	SI.4 Number of languages
												Adult literacy rate	Secondary education		
Spain	0.728	0.855	0.796	0.824	0.945	0.700	0.778	0.283	0.74	1	0.629	0.808	0.947	0.059	0.7
Ecuador	0.629	0.664	0.63	0.664	0.697	0.587	0.531	0.038	0.81	0.97	0.638	0.541	0.940	0.371	0.7
El Salvador	0.650	0.647	0.548	0.765	0.629	0.592	0.491	0.208	0.67	1	0.711	0.662	0.990	0.391	0.8
Vietnam	0.696	0.730	0.607	0.796	0.786	0.675	0.613	0.358	0.73	1	0.683	0.655	0.900	0.378	0.8
East Timor	0.577	0.407	0.407	0.918	0.408	0.633	0.633	0.83	0.83	0.83	0.510	0.470	0.699	0.369	0.5
Brazil	0.652	0.645	0.577	0.553	0.805	0.627	0.556	0.151	0.8	1	0.685	0.366	0.960	0.415	1
Average	0.671	0.686	0.594	0.753	0.712	0.636	0.601	0.208	0.750	0.967	0.643	0.584	0.906	0.331	0.750

Note: Authors' work.

systematically produced by internationally recognized institutions of significant importance. In this way, there can be a continuous review of the values in subsequent years.

Furthermore, we conducted an extensive analysis of the data from statistical tests, with the intention of verifying the normality of the data and the correlation of the variables (Maroco 2010). We verified, according to the statistical study, that the variables have a predominantly normal distribution and that the correlation between the indicators is strong.

To explore the underlying structure of the indicators, we conducted a principal component factor analysis. This analysis aimed to investigate the relationships between the indicators and the initial thematic grouping of economic, political, and social dimensions. While the results did not precisely align with the pre-defined categories, this exploratory analysis revealed valuable insights into potential interconnections among the variables. These findings offer a compelling basis for generating future hypotheses and contribute to a deeper understanding of the complex patterns within the data, suggesting avenues for refinement and further investigation.

In conclusion, we have successfully constructed the Citizen Participation Index (CitPI). While acknowledging the inherent challenges in numerically representing a multifaceted reality like public decision-making, we believe this index offers a valuable and robust measure of citizen participation within the studied environments. The CitPI provides a solid foundation for comparative analysis and longitudinal studies, offering a significant contribution to the field.

5 | Implications and Limitations of the CitPI

The Citizen Participation Index (CitPI) provides a comprehensive framework for evaluating citizen engagement across diverse governance contexts. For example, countries with low trust levels may prioritize transparency initiatives, while those with limited education access should focus on capacity-building programs.

By integrating economic, political, and social dimensions, the CitPI serves as a valuable tool for policymakers, researchers, and development practitioners aiming to enhance participatory governance. Its application can inform targeted policy interventions, allowing governments and international organizations to identify barriers to participation and implement strategies that foster civic engagement.

Despite its strengths, the CitPI has limitations that should be acknowledged. One key challenge is data availability, particularly in lower-income countries where reliable indicators on citizen participation may be scarce or inconsistent. This can affect the robustness of cross-country comparisons and limit the generalizability of findings. Additionally, the index primarily relies on quantitative metrics, which may not fully capture contextual nuances, such as cultural factors and informal participation mechanisms that influence civic engagement.

Potential areas for improvement include refining the indicator selection to incorporate emerging dimensions of participation,

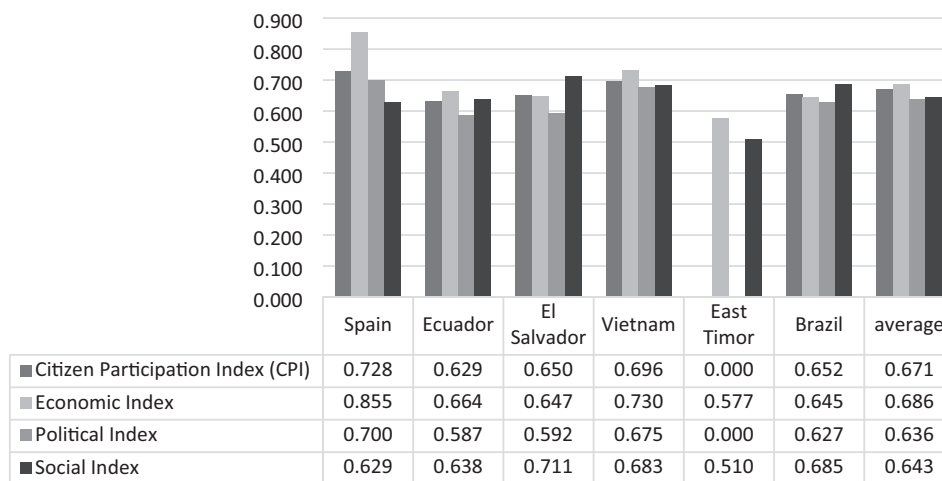


FIGURE 7 | Citizen Participation Index (CitPI) in the studied countries. Source: authors' work.

such as public security, right to information, and digital engagement and the role of social media in civic activism. Expanding the geographic scope of data collection and employing mixed-method approaches, including qualitative assessments and case studies, can further enhance the CitPI's applicability. Future iterations could also explore weighting adjustments to better reflect the varying impacts of different participation factors across governance systems. By addressing these limitations, the CitPI can evolve into an even more effective instrument for assessing and promoting citizen participation worldwide.

6 | Conclusions

The Citizen Participation Index (CitPI) represents a pioneering effort to standardize the measurement of citizen participation. As highlighted by the foundational work of Lima (2015), by integrating diverse economic, political, and social dimensions, the CitPI provides a comprehensive framework for assessing the potential and challenges of participation across different governance contexts. While data gaps and contextual variations persist, the CitPI offers valuable insights for designing more inclusive and effective development policies.

The development of the CitPI was grounded in field research across six countries—Ecuador, El Salvador, Vietnam, Timor-Leste, Spain, and Brazil—selected based on the researchers' extensive knowledge of their public policy and citizen participation landscapes. This study sought to bridge the gap in understanding how populations engage in the identification, implementation, and evaluation of development projects.

Designed as a comparative tool, the CitPI enables cross-country assessments and long-term tracking of participation trends. Constructed using 11 indicators divided into economic, political, and social dimensions, the index provides a nuanced understanding of participation. The economic indicators addressed issues such as the Human Development Index Adjusted for Inequality, the Gini coefficient, and internet access. The political indicators captured perceptions of corruption, trust in

others, freedom of choice, and historical conflict. The social indicators encompassed educational attainment, literacy rates, gender inequality, and linguistic diversity.

Two of these indicators—historical conflict and linguistic diversity—were conceptualized specifically for this study, underscoring the need for tailored metrics in evaluating participation. To ensure accuracy, most data underwent mathematical-statistical transformations, allowing for meaningful cross-national comparisons.

The CitPI results highlighted distinct patterns of participation across countries. Spain, as the most developed country in the sample, exhibited the highest CitPI score, yet also revealed limitations, such as low trust in others. Latin American countries—Brazil, Ecuador, and El Salvador—displayed similar participation conditions despite economic disparities, with notable differences arising from inequality, internet access, and social trust.

The contrasting realities of Vietnam and Timor-Leste reinforced the importance of historical and socio-political factors. While Vietnam demonstrated a strong participation potential due to low inequality and high levels of trust and education, Timor-Leste's recent history of conflict and lower development levels significantly constrained participation.

Despite inherent limitations in measuring such a complex phenomenon, the CitPI successfully reflects participation dynamics across different governance models. Future refinements of the index could incorporate emerging variables such as digital inclusion, right to information, and the role of security in participation, ensuring its continued relevance and applicability in diverse socio-political landscapes.

The remainder of the article is structured as follows. Section 1 details the theoretical and conceptual framework underpinning the CitPI. Section 2 outlines the methodology used to construct the index. Section 3 presents the key results and discussion. Finally, Section 4 concludes with the implications and limitations of the CitPI.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data supporting this study are publicly available on the websites of various international organizations, including the World Bank (<https://data.worldbank.org/>) and the United Nations Organization (<https://data.un.org/>).

Endnotes

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²Original description for the indicator “Trust in other people”: Percentage of respondents answering “can be trusted” to the Gallup World Poll question, “Generally speaking, would you say that most people can be trusted or that you have to be careful in dealing with people?”

³Original description for the indicator “Satisfaction with freedom of choice”: Percentage of respondents answering “satisfied” to the Gallup World Poll question, “In this country, are you satisfied or dissatisfied with your freedom to choose what you do with your life?”

⁴Percentage of the population ages 25 and older that reached at least a secondary level of education.

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