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Open government and municipal effectiveness: Towards a modernization of the state in a region of the Peruvian jungle

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Abstract: The objective of the study was to determine the relationship between open government and municipal effectiveness State a region of the Peruvian jungle. The research followed a quantitative approach with a non-experimental, cross-sectional, and correlational design. The population comprised citizens of State in a region of the Peruvian jungle, with a sample of 625 individuals. A structured survey was employed as the data collection technique, using a validated questionnaire as the instrument. The results revealed a positive, high, and significant correlation between governance and municipal effectiveness (Spearman's Rho = 0.813, $p < 0.01$). Furthermore, the dimensions of transparency, integrity, accountability, and citizen participation showed moderate to high correlations with municipal effectiveness, with accountability (Rho = 0.779) emerging as the most influential dimension. It was concluded that the principles of open government play a crucial role in shaping the perception of effective municipal management. This underscores the need to strengthen transparency, integrity, and citizen participation policies to enhance public services and foster trust in local authorities.

Keywords: municipal effectiveness; governance; transparency; governmental transformation

1. Introduction

The advancement of science and technology has transformed public management, driving the need for modern strategies that ensure transparency, citizen participation, and accountability (Meijer et al., 2012). However, modernization initiatives face barriers such as insufficient resources, inadequate infrastructure, and a lack of trained human capital, limiting their impact on public administration (OECD, 2020). Open government has emerged as a key solution to foster public trust and enhance government effectiveness. Based on principles of accessibility, participation, and accountability, this approach aims to modernize public institutions (World Bank, 2016). Nevertheless, its implementation faces challenges such as bureaucracy, lack of political will, and ineffective monitoring mechanisms, particularly at the local level (Gascó, 2017). According to Bruce (2021), inefficiency in the region's public management is reflected in the imbalance between high government spending and mediocre outcomes.

Furthermore, the lack of citizen participation perpetuates corruption, weakening trust in public institutions. This is exacerbated in contexts where leaders restrict access to information and limit citizen participation, undermining the fundamental principles of open government (MINJUSDH, 2018). In Peru, municipalities face similar challenges. Despite legal measures to strengthen the relationship between the state and

its citizens, transparency, integrity, and accountability remain inadequate. The Comptroller General of the Republic (2022) reported that 90% of public entities have corruption-related issues, leading to economic losses of S/24,262,964,827 in 2021 (Shack, 2022). Additionally, only 48% of provincial municipalities meet minimum transparency standards, restricting public access to critical information for citizen oversight (INEI, 2022).

These issues are evident in a region of the Peruvian jungle. Municipalities face difficulties in implementing technologies that facilitate transparency and promote citizen participation. Despite efforts to strengthen governance, obstacles such as inadequate infrastructure, limited financial resources, and weak institutional capacities persist. This has led to negative perceptions regarding the efficiency of municipal management and the legitimacy of authorities. For instance, an 8.9% increase in computer acquisitions between 2019 and 2022 has not ensured the effective use of ICT to improve public services (INEI, 2022). Based on this context, the research problem arises: How is open government related to municipal management effectiveness in a region of the Peruvian jungle? What is the level of open government? What is the level of municipal management effectiveness? Overcoming these challenges requires an integrated approach that includes capacity building, the development of robust legal frameworks, and the promotion of a culture of transparency and citizen participation. Therefore, this study seeks to contribute to understanding local governance dynamics and propose strategies to drive the effective modernization of public institutions in the region.

Additionally, the objectives were established as follows: Determine the relationship between open government and municipal management effectiveness in a region of the Peruvian jungle. Identify open government practices. Assess the level of effectiveness of municipal management. Analyze the relationship between the dimensions of open government and municipal management effectiveness.

2. Theoretical framework

Numerous studies have been conducted focusing on open government and municipal effectiveness, but separately, each addressing different fields. In this regard, Gross et al. (2024) concluded that local governments, through coordinated work with other state agencies, can significantly contribute to reducing social issues such as crime by acting as super controllers and conducting rigorous evaluations.

Similarly, Beltramo et al. (2024) emphasized the importance of open data as a key tool for management and governance. In the context of open government, it is essential that information and data are available on digital platforms and tools, ensuring accessibility for users. Likewise, Matheus et al. (2023) concluded that transparency is only achieved when open data is genuinely useful to the public. This means that the information provided through digital tools or accountability processes must be up-to-date and relevant to citizens. According to Xing et al. (2024), open government data promotes economic development, an aspect that directly aligns with this research.

Open government is understood as a culture of public management that prioritizes transparency, accountability, citizen participation, and institutional integrity (OECD,

2021). These principles aim to democratize governmental management, promote citizen trust, and ensure that governments act in the public's interest.

To achieve open government, viable policies are necessary to simplify management within an entity in order to meet the established objectives. In this regard, Laurengo (2022) points out that the accumulation of policies can lead to complexity and administrative overload, hindering the effective implementation of public policies. Therefore, a holistic approach to open governance is needed that allows for the prioritization of key policies, management of administrative resources, and the promotion of effective and transparent public oversight. In this context, Matheus et al. (2021) and Valencia (2022) state that digital transparency is an organizational challenge that requires specific tools and institutional leadership. It is worth mentioning that the Organization for Economic Cooperation and Development (OECD) considers four important principles to achieve open government: a) Transparency: This involves the timely disclosure of relevant government information and data, which must be accessible, understandable, and reusable. In Peru, this includes information on public affairs, budgets, procurement, and service delivery. b) Integrity: Refers to the ethical conduct of public officials, prioritizing public interest over private interests, based on values and standards. c) Accountability: It is the right and duty of the government to provide clear information about its actions and to take responsibility for its decisions. It also involves citizens in critical analysis and questioning to reward or sanction behaviors through institutional and social channels. In Peru, this includes anti-corruption measures and strengthening oversight institutions. d) Citizen Participation: This entails the active inclusion of citizens and stakeholders in the design and implementation of public policies, budget allocation, and project monitoring. In Peru, mechanisms such as public consultations, participatory budgets, and social audits are promoted to enhance decision-making and ensure continuous interaction between the State and civil society (PCM, 2021).

Municipal effectiveness refers to the level of achievement of established objectives through the optimal use of available resources (Chiavenato, 2010). In the Peruvian context, Law No. 29158 establishes that effectiveness must be measured through indicators related to administrative management, the use of information technologies, and the delivery of public services. In this regard, Bandura (1986), in his theory of self-efficacy, emphasizes the importance of individuals' abilities to achieve goals. This theory applies to management where skills, abilities, and competencies are utilized to meet organizational goals and objectives. Therefore, the motivation of public officials is essential to ensure efficient management, as it engages the entire team in institutional activities. Similarly, the expectancy-value theory by Fishbein and Ajzen (1975) suggests that the probability of success influences effort and persistence. This implies that government entities must motivate their personnel to dedicate themselves more fully and persist to overcome the inherent challenges of public management.

The factors of municipal effectiveness are considered: a) Human resources: Integration, training, and willingness of staff to meet institutional goals. b) Information and communication technologies: Computer systems, internet access, and digital platforms that optimize public management. c) Tax and administrative management: Processes related to urban planning, oversight, and tax collection. d) Provision of local

public services: Education, health, sanitation, and citizen security, among other essential services. These factors require continuous monitoring and the ability to make timely adjustments to ensure their effectiveness (Mokate, 2001).

Open government is a key factor in improving municipal effectiveness. Transparency allows for continuous oversight by citizens, while accountability promotes institutional responsibility. Moreover, citizen participation in decision-making contributes to designing more inclusive policies tailored to local needs (Machin et al., 2019). However, as noted by Kempeneer et al. (2023), the implementation of open governments faces challenges related to the limited understanding of legal and regulatory frameworks by public officials, as well as resistance to cultural change within institutions. In this regard, concerted efforts are needed to promote training and awareness of open governance principles at both the institutional and citizen levels.

To achieve state modernization, a cultural reengineering of individuals is required to promote adherence to the principles of open government. This includes transparency of information through digital tools and platforms, accountability as established by the Organic Law of Municipalities No. 27972, the integrity of public officials, and the participation of citizens and stakeholders in monitoring the work of their authorities. Additionally, it involves active involvement in decision-making processes to strengthen trust. In this regard, Díaz-Canel (2018) emphasizes that digitalization and government-citizen interaction platforms are fundamental tools to enhance the relationship between both parties. Furthermore, contemporary theories on effectiveness, such as Bandura's social cognitive theory and Kelley and Weiner's attribution theory, highlight the importance of organizational work, leadership, and accountability as drivers of effective public management.

In **Figure 1**, it is observed, open governance and municipal effectiveness are interdependent and essential for state modernization. State in a region of the Peruvian serva demands an integrated approach that combines institutional capacity building with the promotion of active and participatory citizenship. This model will not only contribute to sustainable development but also foster greater trust in public institutions and more inclusive open governance.

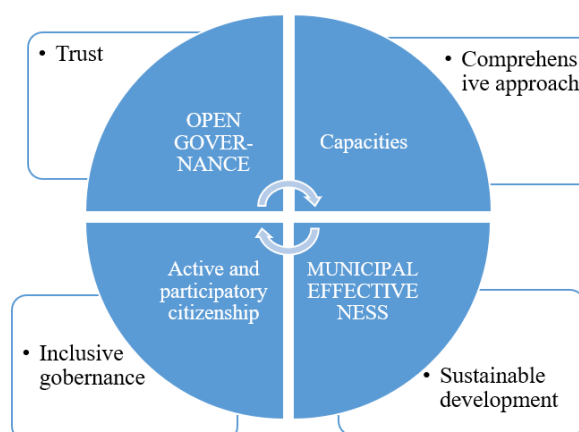


Figure 1. Open governance and municipal effectiveness.

3. Material and method

The research is classified as basic, as its main goal is to generate theoretical and empirical knowledge about the relationship between open government and municipal effectiveness, without seeking to directly intervene in or modify the variables studied. The design was non-experimental, as the variables were observed in their natural state without any manipulation. A quantitative approach was employed, relying on the collection and statistical analysis of numerical data to establish significant correlations between the variables. The scope of the research was correlational, aiming to measure the relationship between open government and effectiveness in the municipalities of the region. Additionally, the study used a cross-sectional approach, collecting data at a single point in time. The population consisted of 926,000 citizens from in a region of the Peruvian jungle, specifically those aged between 22 and 66 years, who were familiar with municipal management in their locality. This age range ensures that participants have adequate understanding of municipal processes and direct experience with public services. The selected sample comprised 625 citizens, with a confidence level of 96%, using probabilistic sampling to ensure the population's representativeness and minimize bias in the results.

The survey technique was used as a data collection method, applied through two structured questionnaires. The open government questionnaire: This instrument evaluated four fundamental dimensions: Transparency (4 items): measures the level of openness and access to public information. Integrity of the public sector (4 items): evaluates honesty and ethics in municipal management. Accountability (10 items): analyzes the capacity of municipalities to inform and respond to citizens. Citizen and stakeholder participation (6 items): measures the inclusion of actors in decision-making. The Municipal Effectiveness questionnaire: This instrument evaluated four operational dimensions: Equipment and Information and Communications Technologies (ICT) (3 items): analyzes the available technological infrastructure, human resources (4 items): measures the quality and preparation of municipal personnel, municipal powers and functions (7 items): evaluates compliance with institutional roles and local public services (12 items): measures the quality and efficiency of the services offered. It is worth mentioning that both questionnaires used a five-point Likert-type ordinal scale, where 1 represented "Never" and 5 "Always."

The validity of the instruments was established through expert judgment. Five specialists in governance and public management evaluated the questionnaires, using Aiken's V coefficient. A score greater than 0.80 was obtained, which guaranteed adequate content validity. The reliability of the instruments was determined using Cronbach's alpha coefficient, reaching values greater than 0.70 in each of the dimensions, which indicates acceptable internal consistency.

Data collection was carried out through surveys administered virtually, ensuring coverage of the ten provinces of a region in the Peruvian jungle. The voluntary and anonymous participation of citizens was guaranteed, as well as the confidentiality of the information obtained.

The data were initially processed using descriptive statistics to analyze the levels of open government and municipal management effectiveness. Subsequently, a normality test was applied to determine the data distribution and select the appropriate

statistic for the correlational hypotheses. Given that the sample size exceeded 50, the Kolmogorov-Smirnov test was used, revealing that the data did not follow a normal distribution, as the bilateral significance value was below 0.000. Consequently, Spearman’s Rho coefficient was employed to evaluate the correlations. In a second phase, the correlational hypotheses were tested using SPSS software v.26, enabling the data to be processed and results clearly presented through tables. This methodological approach facilitated a rigorous analysis of the relationship between open government and municipal effectiveness, allowing for the presentation of results and recommendations to those responsible for public management.

4. Results and discussion

In **Table 1**, on open government in a region of the Peruvian jungle reveals a notably concentrated distribution between the levels of “poor” and “fair,” with 47% (294 people) falling under the poor level and 52% (324 people) under the fair level. This indicates that, overall, most citizens perceive that the principles of open government are not effectively implemented in their municipalities. Only a small percentage (1%) evaluates governance as “good,” reflecting a significant margin for improvement in local public management.

Table 1. Open government level.

Variable	Level	Range	N ^o	%
Open government	Deficient	24–66	294	47%
	Regular	67–98	324	52%
	Good	99–120	7	1%
Total			625	100%

Note: Instruments applied to citizens.

This finding aligns with previous studies addressing the implementation of open government. According to Laurencó (2022), the accumulation of public policies can hinder administrative efficiency, particularly when a comprehensive analysis is not conducted. If citizens and civil society organizations are not fully informed about policies and focus solely on demanding new ones, it can create a false sense that problems are being resolved. This phenomenon seems present in the region under study, where the perception of open governance is rated as poor. This suggests that, despite the implementation of policies, there may be issues of administrative overload and a lack of transparency undermining the effectiveness of public policies.

Moreover, Matheus et al. (2021) highlight that achieving true transparency requires designing digital transparency platforms that enable citizens and organizations to analyze data meaningfully. The absence of such platforms may be contributing to the perception of deficiencies in open governance in the region. Similarly, Kempeneer et al. (2023) point out that open data laws do not always positively impact open government practices, given the complexity of regulations and a lack of understanding among officials. This phenomenon may explain why a high percentage of citizens perceive deficiencies in open governance, potentially linked to inadequate understanding of laws and technological tools by authorities and the

population. Results are also similar to those of Beltramo et al. (2024), who indicated that the use of open data is key to management and governance. From the perspective of open government, information and data must be available on digital platforms and tools, accessible to users. Similarly, Matheus et al. (2023) concluded that transparency is only achieved if open data is truly useful to the public. This implies that the information presented in digital tools or accountability processes must be up-to-date and relevant to citizens.

Gross et al. (2024) concluded that local governments can contribute to reducing social issues such as crime. These findings are related to this research as they address one of the fundamental principles of open government: citizen and stakeholder participation. According to Xing et al. (2024), open government data promotes economic development, an aspect that directly aligns with this research. In a context of municipal efficiency and open government, the goal is for citizens to save time and money in their municipal procedures, contributing to an increase in household income. Furthermore, transparent municipal management, led by ethical officials committed to addressing citizens' needs in a prioritized manner, would foster both economic development and sustainable growth.

Based on these findings, open government in the region requires a thorough review of its principles, particularly regarding transparency, accountability, and citizen participation. It is essential for local governments to strengthen open and transparent data platforms, as suggested by Matheus et al. (2021), and promote greater understanding and training among public officials, as recommended in the studies by Kempeneer et al. (2023). Furthermore, the fact that the majority of the sample perceives open government as poor or fair may indicate that public policies are still not being implemented effectively or inclusively. Overcoming the policy accumulation mentioned by Laurencó (2022) necessitates adopting a more comprehensive approach that not only focuses on creating new policies but also on improving existing ones, ensuring sufficient resources, and fostering genuine citizen participation.

In **Table 2**, on municipal effectiveness in a region of the Peruvian jungle, it reveals a notably concentrated distribution between the levels of “poor” and “average,” with 47% (294 people) rating governance as poor and 52% (324 people) as average. This suggests that the majority of citizens perceive that the principles of open governance are not effectively implemented in their municipalities. Only a small percentage (1%) evaluated governance as “good,” highlighting a significant area for improvement in local public management.

Table 2. Municipal efficiency level.

Variable	Level	Range	N°	%
Municipal efficiency	Deficient	26–61	198	32%
	Regular	62–96	221	35%
	Good	97–130	206	33%
Total			625	100%

Note: Instruments applied to citizens.

This finding aligns with previous studies on open governance implementation. Laurengo (2022) argues that the accumulation of public policies can hinder administrative efficiency, especially when not accompanied by comprehensive analysis. Citizens and civil society organizations focusing on demanding new policies without full awareness of existing ones may foster a false sense of problem resolution. This phenomenon appears to be evident in the study region, where perceptions of open governance as deficient suggest issues of administrative overload and lack of transparency affecting public policy effectiveness.

Similarly, Matheus et al. (2021) emphasize the need for digital transparency platforms to enable citizens and organizations to analyze data meaningfully. The absence of such platforms may be contributing to the perception of poor governance in the region. Additionally, Kempeneer et al. (2023) highlight that open data laws do not always positively impact governance practices due to the complexity of regulations and limited understanding by officials. This could explain why a significant portion of citizens perceives deficiencies in open governance, which may be linked to inadequate knowledge of laws and technological tools among both authorities and the public.

Given these results, open governance in the region requires a thorough reassessment of its principles, particularly regarding transparency, accountability, and citizen participation. Local governments must strengthen open and transparent data platforms, as suggested by Matheus et al. (2021), and foster better understanding and training for public officials, as recommended by Kempeneer et al. (2023). Furthermore, the widespread perception of governance as poor or average could indicate that public policies are not yet effectively or inclusively implemented. Addressing the policy accumulation issue mentioned by Laurengo (2022) requires a more integrated approach that prioritizes improving existing policies, ensuring sufficient resources, and establishing genuine citizen participation.

In summary, regular and deficient perceptions reflect structural and organizational challenges in municipalities that demand comprehensive reforms. The adoption of digital technologies, a better understanding of the regulatory framework, the optimization of processes and the active participation of citizens are crucial elements to improve municipal effectiveness and move towards a more open and efficient governance model.

In **Table 3**, shows a positive, moderate, and significant correlation between the dimensions of transparency and integrity with the variable municipal effectiveness, with a Spearman's Rho of 0.629 and 0.669, respectively, and a bilateral Sig. of .000, $p < 0.01$. A positive, strong, and significant correlation is also observed between the dimensions of accountability and participation with the variable municipal effectiveness, with a Spearman's Rho of 0.779 and 0.726, and a bilateral Sig. of 0.000, $p < 0.01$. Therefore, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_1) is accepted, concluding that there is a significant relationship between the dimensions of open governance and municipal effectiveness. These results align with the contributions of Matheus et al. (2021), who argue that transparency is essential, but not sufficient on its own, as it requires clear interpretation and access mechanisms. According to Laurengo (2022), the accumulation of policies without an ethical focus can lead to administrative overload and ultimately undermine the public perception of effectiveness.

Table 3. Relationship between the dimensions of open governance and municipal effectiveness.

		municipal effectiveness
Transparency	Correlation coefficient	0.629**
	Sig. (bilateral)	0.000
	<i>N</i>	625
Integrity	Correlation coefficient	0.667**
	Sig. (bilateral)	0.000
	<i>N</i>	625
Surrender	Correlation coefficient	0.779**
	Sig. (bilateral)	0.000
	<i>N</i>	625
Stake	Correlation coefficient	0.726**
	Sig. (bilateral)	0.000
	<i>N</i>	625

Nota: ata obtained from Spss V.28.

This evidence shows that citizens highly value the mechanisms by which governments report on their actions and results. As Kempeneer et al. (2023) argue, open data laws and monitoring systems are essential elements for building trust and legitimacy in public institutions. A government that encourages the active inclusion of citizens in decision-making is perceived as more effective. Machin et al. (2019) maintain that this interaction strengthens the bond between citizens and authorities, promoting shared responsibility in public management.

In summary, when the principles of transparency, integrity, accountability, and participation are consistently applied, they generate a positive impact on how citizens perceive the municipal government’s capacity to deliver services and manage resources. This finding is in line with Valencia (2022), who emphasizes that effectiveness in public management is not only a matter of technical efficiency but also of legitimacy and social trust, built through open and transparent interaction with citizens.

In **Table 4**, shows a statistically significant relationship between open governance and municipal effectiveness, with a Spearman correlation coefficient of 0.813. This positive correlation indicates that as the perception of open governance improves, the perception of municipal effectiveness also tends to improve. These results are similar to those of Matheus et al. (2021), who highlighted that transparency, a fundamental principle of open governance, is essential for strengthening the perception and performance of government institutions. Although transparency alone does not guarantee immediate results, designing accessible and contextual systems can improve both the perception and the reality of institutional effectiveness. This also aligns with Valencia (2022), who emphasized that effectiveness in public management depends on the rigorous measurement of results and the strategic design of public policies, principles that are in line with open governance.

Table 4. Relationship between open governance and municipal effectiveness.

		municipal effectiveness	
Spearman's rho	Governance	Correlation coefficient	0.813**
		Sig. (bilateral)	< 0.001
		<i>N</i>	625

Nota: ata obtained from Spss V.28.

Support for previous theories: Kempeneer et al. (2023) emphasized the importance of understanding the legal and regulatory framework to effectively implement the principles of open governance. Díaz-Canel (2018) suggested that the development of inclusive digital platforms can be a means to improve this relationship, allowing for smoother interaction between citizens and institutions.

In conclusion, this strong correlation shows that open governance not only has a positive impact on citizen perception but is also a key factor in promoting significant improvements in the effectiveness of municipal institutions. This requires a commitment to implementing open practices, technological modernization, and training officials to face contemporary challenges.

5. Conclusions

A positive, strong, and significant correlation was found between open governance and municipal effectiveness in a region of the Peruvian jungle, with a Spearman's Rho of 0.8123 and a bilateral Sig. < 0.01. This indicates that the principles of open governance are key factors in improving the perception of effectiveness in municipal management, reinforcing the idea that more open and participatory management increases citizen trust and satisfaction.

The results show that the level of open governance implementation in the evaluated municipalities was moderate, with 52%. This suggests that, although there are efforts to incorporate principles of transparency, integrity, accountability, and citizen participation, challenges remain in consolidating these practices in public management.

Municipal management effectiveness was perceived as moderate (35%) by the majority of the citizens surveyed. While progress in some services and public policies is acknowledged, the general satisfaction level indicates that there are critical areas needing improvement, such as citizen service, transparency in resource use, and the provision of basic services.

There was a positive and significant correlation between the dimensions of open governance and municipal effectiveness in a region of the Peruvian jungle. A moderate correlation was found between the dimensions of transparency and integrity, highlighting the importance of these dimensions as basic pillars for building trust in public management. The dimensions of accountability and citizen participation showed a positive, strong, and significant correlation, which demonstrates their direct impact on the perception of effective municipal management. This reflects that citizens especially value the authorities' ability to be accountable and the opportunity to actively participate in decision-making processes.

6. Limitations of research

The study encountered several limitations: The research focused exclusively on a specific region of the Peruvian jungle, which could limit the generalizability of the results to other regions with different political, social, and economic contexts. Although a significant relationship was found between the variables, the correlation analysis does not allow for the determination of causality, leaving open the possibility that other external factors influence the relationship between open government and municipal effectiveness. As it is a non-experimental and cross-sectional design, the data collected reflects a snapshot at a given moment, which prevents establishing causal relationships or assessing how the variables evolve over time. Therefore, future researchers should focus on addressing these aspects.

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