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Abstract

Due to its complexity, corruption tolerance among public servants has predominantly been investigated through qualitative rather than quantitative research. Accordingly, this article examines tolerance of public corruption through a system dynamics simulation grounded in a linear model that estimates whistleblowing intention. To construct this model, 21 variables related to tolerance of corruption were identified and measured using a Likert-scale instrument. The scores for each variable were used to estimate whistleblowing intention and type (internal or external) among civil servants. As a result, a multiple linear regression model was constructed to identify seven significant variables associated with whistleblowing intention. The most relevant was the rationalization of “strict adherence to procedures,” through which civil servants dilute responsibility and experience dissonance and guilt when they witness an act of corruption.

Keywords: corruption, public-sector organizations, corruption tolerance, unethical behavior, computer simulation, organizational culture.

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Un modelo de tolerancia a la corrupción pública: racionalización e intención de denuncia

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Resumen

Debido a su complejidad, el problema de la tolerancia a la corrupción en los servidores públicos se ha abordado principalmente mediante enfoques cualitativos de investigación, pero no se ha estudiado lo suficiente desde enfoques cuantitativos. Por esta razón, en este artículo se analizó la tolerancia a la corrupción mediante una simulación de dinámica de sistemas basada en un modelo lineal que estimó la intención de denunciar irregularidades por parte de los servidores públicos. Para este propósito, se definieron 21 variables asociadas a la tolerancia a la corrupción, a partir de las cuales se construyó un instrumento de escala de Likert. Las puntuaciones obtenidas en cada variable se utilizaron para estimar la intención y el tipo de denuncia (interna o externa). Como resultado, se construyó un modelo basado en regresiones lineales múltiples que identificó siete variables significativas para la denuncia de actos corruptos, entre las cuales la más relevante fue la racionalización del “cumplimiento estricto de los procedimientos”, mediante la cual los servidores públicos diluyen la responsabilidad y enfrentan la disonancia y la culpa que surgen al presenciar un acto de corrupción.

Palabras clave: corrupción, organizaciones del sector público, tolerancia a la corrupción, comportamiento poco ético, simulación computacional, cultura organizacional.

Introduction

Corruption has garnered greater interest since the 1990s, largely due to the emergence of international corruption indices that enable cross-country comparisons and identify possible causes and consequences of corrupt practices. Theories and models have also been developed to explain corruption from different perspectives, such as the cost-benefit approach as an application of Becker's crime theory, Donald Cressey's normative approach,¹ and Blake Ashforth and Vikas Anand's theory of the normalization of corruption,² with Donald Palmer's proposed extension.³ These theoretical approaches have been used to feed mathematical and probabilistic models for understanding corruption in organizations, such as Tanja Rabl and Torsten Kühlmann's *action model*⁴ and Klaus Abbink, Bernd Irlenbusch, and Elke Renner's *experimental bribery game*.⁵

However, despite efforts to understand and explain corruption, international indicators have not improved significantly over the past 11 years,⁶ which makes it clear that some dimensions have not yet been sufficiently analyzed. One of them is the tolerance of public corruption, understood as "the extent to which an individual would be willing to tolerate unethical or deviant behaviors, fraud, or malfeasance in the government."⁷ In this sense, Transparency International considers that "Whistleblowing is one of the most effective ways to detect and prevent corruption and other malpractice"⁸ and raises the need to promote the strengthening of legislation related to the protection of whistleblowers.

¹ Donald Cressey, ed., *The prison: studies in institutional organization and change* (New York: Holt, Rinehart and Winston, 1961), 10–14.

² Blake Ashforth and Vikas Anand, "The Normalization of Corruption in Organizations," *Research in Organizational Behavior* 25 (2003), 1–52.

³ Donald Palmer, "Extending the process model of collective corruption," *Research in Organizational Behavior* 28 (2008), 107–35, <https://doi.org/10.1016/j.riob.2008.04.005>

⁴ Tanja Rabl and Torsten M. Kühlmann, "Understanding corruption in organizations: development and empirical assessment of an action model," *Journal of Business Ethics* 82, no. 2 (2008), 477–95, <https://doi.org/10.1007/s10551-008-9898-6>

⁵ Klaus Abbink, Bernd Irlenbusch, and Elke Renner, "An experimental bribery game," *Journal of Law, Economics, & Organization* 18, no. 2 (2002), 428–54, <https://doi.org/10.1017/CBO9781139962933>

⁶ Transparency International, *2022 Corruption Perceptions Index reveals scant progress against corruption as world becomes more violent*, <https://www.transparency.org/en/press/2022-corruption-perceptions-index-reveals-scant-progress-against-corruption-as-world-becomes-more-violent>.

⁷ Ting-An-Xu Liu, Wen-Jong Juang, and Chilik Yu, "Understanding Corruption with Perceived Corruption: The Understudied Effect of Corruption Tolerance," *Public Integrity* 25, no. 2 (2022), 207–19, <https://doi.org/10.1080/10999922.2022.2029095>

⁸ Transparency International, *Whistleblowing*, <https://www.transparency.org/en/our-priorities/whistleblowing>.

The research presented in this paper focuses on explaining the tolerance of corruption among public employees who, in their role as non-corrupt witnesses, observe irregular behavior but refrain from whistleblowing and even normalize it. This ethical permissiveness around corruption has been studied through qualitative methods in recent years. Peter Fleming et al.⁹ developed a grounded theory through interviews with civil servants in Greece. The authors identified conceptual elements for analyzing public corruption tolerance, proposing that, as corrupt actions become normalized, so too might corruption tolerance.

Subsequently, Diego Alejandro Peralta et al.,¹⁰ based on in-depth interviews with Colombian civil servants, developed a grounded theory to explain the process of corruption tolerance. According to their theory, when a non-corrupt civil servant discovers irregular behavior, an emotional response is elicited, which produces a rationalization type that influences the whistleblowing intention. In the same direction, Anastasia Cheliatsidou et al.,¹¹ following a qualitative methodology, collected primary data through in-person semi-structured in-depth interviews to investigate how the political, legal, organizational, and cultural environments within Greek municipalities lead to negative employee attitudes toward whistleblowing.

To this end, whistleblowing is one of the most effective ways to detect corruption. Understanding public corruption tolerance is a tool for designing internal control systems, analyzing risks in the control environment, planning audit assignments, and developing public anti-corruption policies that encourage employees and managers to act as whistleblowers.

System dynamics as a modeling environment was chosen because of the complexity of human behavior and the dynamics of interactions within government organizations. The model was developed using a Likert-scale instrument; the resulting scores for each variable were used to estimate whistleblowing intention and type (internal or external) among civil servants. As a result, a multiple linear regression

⁹ Peter Fleming et al., "How Corruption is Tolerated in the Greek Public Sector: Toward a Second-Order Theory of Normalization," *Business and Society* 6, no. 1 (2022), 191–224, <https://doi.org/10.1177/0007650320954860>.

¹⁰ Diego Alejandro Peralta Borray, Johana Sareth Acuña, and Sebastian Zapata, "Grounded Theory of Tolerance of Corruption in Public Organizations: emotion, rationalization, and whistleblowing. The Colombian case," *Qualitative Research in Organizations and Management: An International Journal* 19, no. 3 (2024), 203–25, <https://doi.org/10.1108/QROM-09-2023-2603>.

¹¹ Anastasia Cheliatsidou et al., "Exploring Attitudes towards Whistleblowing in Relation to Sustainable Municipalities," *Administrative Sciences* 13, no. 199 (2023), 2–16, <https://doi.org/10.3390/admsci13090199>.

model was constructed. In it, seven significant variables were found, of which the most relevant rationalization was “strict adherence to procedures,” through which civil servants dilute responsibility and mitigate dissonance and guilt.

This study is organized as follows. First, the literature review is presented, delving into academic documents on corruption tolerance and identifying relevant variables for constructing the model. Secondly, the methodology is presented, detailing the variables used, the sample size, and the characteristics of the public organization to which the survey was administered. Next, the constructed dynamic model is presented, followed by a discussion of its findings and contradictions in comparison with theoretical positions. Based on this analysis, the implications of the causal relationships identified for control systems and public policy are discussed. Finally, limitations and areas of interest for further research are presented.

Review of Relevant Literature

Corruption in organizations was modeled by Rabl and Kühlmann¹² with an *action model* comprising four components that influence corrupt actions (volitional, emotional, motivational, and cognitive). Three main factors influencing the decision-making process towards corruption were also identified: the individual’s favorable attitude towards corruption (favorable or unfavorable evaluation degree of the behavior in question), subjective norm (perceived social pressure to perform that behavior), and a high degree of perceived behavioral control (perceived ease or difficulty in performing corrupt behavior).

This model distinguishes between desire (motivation) and intention (volition), finding that the desire to act corruptly and perceived behavioral control explain 75 % of the intention to act corruptly, and the latter is a strong predictor (60 %) of corrupt action. The individual’s favorable attitude towards corruption, to a greater extent, and subjective norms, to a lesser extent, explained almost half of the desire to act corruptly.

For their part, based on a study of corruption tolerance in Greece’s public sector, Fleming et al. identified four frequent corrupt behaviors: 1) bribery; 2) fraud; 3) falsification of records; and 4) procurement. They propose that corruption tolerance is a second-order normalization that can focus on either *agent-centered* or

¹² Rabl and Kühlmann, “Understanding corruption in organizations,” 479.

structure-centered tolerance. Agent-centered tolerance incorporates the concepts of resignation and apathy. Resignation is presented as a form of fatalism due to fear of being victimized and punished. This is aggravated when the flagged situation is carried out with the connivance of the managers. Apathy is “similar to indifference but associated with lack of motivation.”¹³ This feeling stems from the lack of punishment for corrupt servants, and it is understood not only from direct experience but also from rumors and beliefs within the culture of public employees.

Related to the above, structure-centered tolerance for corruption has two fundamental elements: 1) powerlessness and 2) inertia. Powerlessness refers to the structural inability of the organization (its oversight and procedures) to detect unethical conduct and respond effectively to whistleblowing. Organizational powerlessness is transferred to the social level in courts and regulatory entities, while inertia refers to the resistance of organizations to change, expressed in the feeling: “nothing is going to change,” which is part of the culture of public organizations. The perception that “everyone does it” creates a herd effect that legitimizes a code of silence no one is willing to break, reinforced by the lack of policies and complaint systems. The authors propose that the principal reason for corruption in the public sector is that senior managers and politicians support such actions, exert extensive influence over the appointments of public-sector employees, and offer protection from prosecution.¹⁴

Attitude, desire, and intention to act corruptly: In Rabl and Kühlmann’s¹⁵ *action model*, intention to act corruptly is a strong predictor of corrupt actions, explaining more than 60 % of its variance. Desire mediates this intention, and its determinants are a favorable attitude toward corruption and social pressure to engage in corruption. In this model, “attitude refers to the degree to which a person has a favorable or unfavorable evaluation of the behavior in question.”¹⁶ Samart Powpaka¹⁷ added that “intention to give a bribe is positively influenced by attitude toward bribe giving and subjective norm, and negatively by perceived choice.”¹⁸ Regarding research on

¹³ Fleming et al., “How Corruption is Tolerated in the Greek Public Sector,” 202.

¹⁴ Fleming et al., 206.

¹⁵ Rabl and Kühlmann, “Understanding corruption in organizations,” 489.

¹⁶ Rabl and Kühlmann, 481.

¹⁷ Samart Powpaka, “Factors affecting managers’ decision to bribe: An empirical investigation,” *Journal of Business Ethics* 40, no. 3 (2002), 227–246, <https://doi.org/10.1023/A:1020589612191>.

¹⁸ Powpaka, “Factors affecting managers’ decision to bribe,” 243.

this topic, this paper focuses on favorable or negative attitudes towards corruption and the intention to act corruptly, and examines their possible relationship with civil servants' tolerance of corruption.

Rationalization: Gresham Sykes and David Matza¹⁹ defined rationalization as “justifications for deviance that are seen as valid by the delinquent but not by the legal system or society at large [...] They are viewed as following deviant behavior and as protecting the individual from self-blame and the blame of others after the act.” The authors propose five types of rationalization: 1) denial of responsibility; 2) denial of harm; 3) denial of the victim's claims; 4) condemnation of the condemners; and 5) appeal to higher loyalties. Sykes and Matza's concepts were applied by Ashforth and Anand²⁰ in their normalization of corruption theory to explain how people who engage in corrupt acts use *rationalizing ideologies* to build social narratives that legitimize these acts in front of their own eyes. They added the following types of rationalizations to the list: 1) denying the obvious; 2) malleability of language; 3) the ledger metaphor; 4) social weighting; and 5) legality. In cases of public corruption tolerance, Fleming et al.²¹ found these rationalizations concretized into expressions such as “everyone does it,” “nobody got hurt,” and “doing this for a higher purpose.”

Completing Fleming et al.'s findings, Peralta Borray et al.²² identified the presumption of innocence as the main rationalization: “I do not have the evidence”; also, the rigorous compliance with the procedures: “if the procedure is followed, there is nothing irregular,” and the respect for the hierarchy: “it is not my responsibility to whistleblow.” In agreement, Corporación Transparencia por Colombia²³ revealed that one of the major reasons for closing a whistleblowing process is the whistleblowers' failure to obtain the necessary supporting documentation and mistrust of the competent authorities.

Emotions: Transparency International²⁴ posits that fear of consequences (legal, financial, reputational) is among the top three reasons people do not act as whis-

¹⁹ Gresham Sykes and David Matza, “Techniques of Neutralization: A Theory of Delinquency,” *American Sociological Review* 6, no. 22 (1957), 666, <https://doi.org/10.2307/2089195>.

²⁰ Ashforth and Anand, “The Normalization of Corruption in Organizations,” 3.

²¹ Fleming et al., “How Corruption is Tolerated in the Greek Public Sector,” 202.

²² Peralta Borray, Acuña, and Zapata, “Grounded Theory of Tolerance of Corruption.”

²³ Corporación Transparencia por Colombia, *La denuncia de la corrupción y la protección al denunciante en Colombia* (Bogotá, D.C.: Corporación Transparencia por Colombia, 2020), <https://transparenciacolombia.org.co/wp-content/uploads/doc-caracterizacion-denuncia.pdf>.

²⁴ Transparency International, *Whistleblowing*.

tleblowers. In this sense, Fleming et al.²⁵ found that civil servants' fear of being victimized if they act as whistleblowers stems from the acknowledgment of possible political wrongdoers' interference in their appointment process and power to obstruct investigations. Kathie Pelletier and Michelle Bligh²⁶ also found that employees feel anger, moral indignation, frustration, disillusionment, and contempt toward the organization, its practices, and its leaders when these deviate from the organization's moral foundations and ethical expectations.

Thus, fear and anger are recurrent emotions in corruption tolerance research. Peralta et al.²⁷ described a duality between fear and anger among civil servants when they witness irregular actions. Fear refers to the self-perception of vulnerability, and anger is associated with the possibility of engaging in corrupt actions without taking responsibility. From this perspective, Héctor Tirado and Fernando Nieto²⁸ consider anger and fear to be emotional antecedents of whistleblowing. People who feel anger at acts of corruption are significantly more likely to report, while intense fear can powerfully inhibit whistleblowing.

Apathy is also mentioned in the literature, defined as indifference and a lack of motivation in the face of corrupt behavior under the premise that "nothing will change."²⁹ Loyalty to the group in disregard of loyalty to society was proposed by Bo Rothstein and Eric Uslaner³⁰ as part of a mechanism to increase patronage and inequality. Loyalty has also been explored by Cheliatsidou et al.,³¹ who concluded that whistleblowing concerning loyalty "would create problems in their everyday working routine," "tarnish their relationship with co-workers," and might be perceived as an action of "betrayal."

Normalized corruption: Fleming et al.³² regard corruption tolerance as a second-order normalization. It means that public employees consider corrupt practices in

²⁵ Fleming et al., "How Corruption is Tolerated in the Greek Public Sector," 205.

²⁶ Kathie L. Pelletier and Michelle C. Bligh, "The aftermath of organizational corruption: Employee attributions and emotional reactions," *Journal of Business Ethics* 80, no. 4 (2008), 823–44. <https://doi.org/10.1007/s10551-007-9471-8>

²⁷ Peralta Borray, Acuña, and Zapata, "Grounded Theory of Tolerance of Corruption," 213.

²⁸ Héctor Tirado and Fernando Nieto, "Miedo, enojo y denuncia. Antecedentes emocionales de la denuncia de actos de corrupción en organización," *Gestión y Política Pública* 33, no. 1 (2024), 35, <https://doi.org/10.60583/gyp.v33i1.8187>.

²⁹ Fleming et al., "How Corruption is Tolerated in the Greek Public Sector," 209.

³⁰ Bo Rothstein and Eric M. Uslaner, "All for All: Equality, Corruption, and Social Trust," *World Politics* 58, no. 1 (2005), 41–72. <https://doi.org/10.1353/wp.2006.0022>.

³¹ Cheliatsidou et al., "Exploring Attitudes towards Whistleblowing," 10.

³² Fleming et al., "How Corruption is Tolerated in the Greek Public Sector," 214.

their organizations normal, leading them to develop a tolerance for them. Authors indicate that widespread political interference in public-sector appointments contributes to the normalization of corruption, as politicians or trade unions protect themselves from prosecution as a form of “protecting their own.”

Perception of impunity or organizational powerlessness: Fleming et al.³³ identify that the organization’s powerlessness to sanction acts of corruption contributes to the tolerance of corruption by civil servants. In addition, they indicate that the powerlessness to sanction extends to judges and courts associated with civil servants’ apathy and resignation: “this non-punishment may be attributed not only to deliberate concealment of corrupt incidents but also to the structural powerlessness of the system to respond effectively because of ineffective compliance measures and/or inadequate controls.”³⁴ Peralta et al. define perception of impunity as the belief among civil servants that corrupt behavior is unlikely to be sanctioned. This situation results in the absence of investigation or sanction, inopportune sanctions, low sanctions or penalties, and procedural inequity.³⁵

Retaliation: Corporación Transparencia por Colombia³⁶ presents the fear of violation of life, integrity, liberty, and security in retaliation; the fear of being themselves the target of whistleblowers; the fear of harm to their reputation, honor, and goodwill; the fear of retaliation in employment or service relationships; and the fear of unprotected discrimination as obstacles to whistleblowing by civil servants. Under these circumstances, Fleming et al.³⁷ defined corruption tolerance as a form of self-protection that varies across individuals and depends on their fear of punishment for whistleblowing.

Whistleblowers’ vulnerability: In Colombia, due to security risks stemming from the relationship between corrupt civil servants and criminal groups, Corporación Transparencia por Colombia³⁸ considers whistleblowers vulnerable and takes action to provide them with specific legal protections, including for their families.

³³ Fleming et al., 207.

³⁴ Fleming et al., 207.

³⁵ Fleming et al., “How Corruption is Tolerated in the Greek Public Sector,” 216.

³⁶ Corporación Transparencia por Colombia, *La denuncia de la corrupción*.

³⁷ Fleming et al., “How Corruption is Tolerated in the Greek Public Sector,” 205.

³⁸ Corporación Transparencia por Colombia, *La denuncia de la corrupción*.

But the vulnerability of civil servants can also be economic. Fleming et al.³⁹ found that wages are among the factors that civil servants seek to protect by not whistleblowing against their bosses. Peralta et al. stated that the differences between the high salaries of civil servants hired through patronage and the low salaries of civil servants hired based on merit can motivate low-wage employees to participate in corrupt practices to equalize their income, and high-salary employees to increase their tolerance for unethical behavior. This situation is aggravated when civil servants are responsible for supervising and controlling tasks.⁴⁰

This is the reason why the hiring of public sector employees through merit has been proposed as a tool to reduce corruption,⁴¹ diminishing the possibility of patronage practices that win loyalty from civil servants and make them more permissive in the face of the corrupt actions of their sponsors.⁴²

Whistleblowing intention: Peralta-Borray et al.⁴³ found that whistleblowing by public employees occurs in two ways: 1) within public organizations, civil servants, following established procedures, report irregularities to their line managers or the internal affairs office they deem competent, transferring the responsibility of whistleblowing to a hierarchical superior; this is usually perceived as less effective than external whistleblowing; 2) whistleblowers direct their reports to governmental control bodies, which is considered more effective than internal whistleblowing. The ineffectiveness of internal whistleblowing was also identified by Fleming et al., who found that managers conceal acts of corruption and that "...politicians or trade unions offer protection from prosecution to their appointees or members" to protect their own.⁴⁴

³⁹ Fleming et al., "How Corruption is Tolerated in the Greek Public Sector," 205.

⁴⁰ Diego Alejandro Peralta Borray et al., "Tools for the Diagnosis of Corruption Symptoms in Government Entities," in *Management Strategies and Tools for Addressing Corruption in Public and Private Organizations*, ed. Rafael Ignacio Pérez-Urbe et al. (Hershey, PA: IGI Global Scientific Publishing, 2023), 171–96, <https://doi.org/10.4018/978-1-6684-8536-1.ch010>.

⁴¹ Carl Dahlström, Victor Lapuente, and Jan Teorell, "The Merit of Meritocratization: Politics, Bureaucracy, and the Institutional Deterrents of Corruption," *Political Research Quarterly* 65, no. 3 (2012), 656–68, <https://doi.org/10.1177/1065912911408109>; Sisir K. Das, *Public Office, Private Interest: Bureaucracy and Corruption in India* (London: Oxford University Press, 2012), 656–68, <https://doi.org/10.1093/acprof:oso/9780195653823.001.0001>.

⁴² Rothstein and Uslaner, "All for All," 53.

⁴³ Peralta Borray, Acuña, and Zapata, "Grounded Theory of Tolerance of Corruption," 218.

⁴⁴ Fleming et al., "How Corruption is Tolerated in the Greek Public Sector," 214.

Methodology

This exploratory quantitative study validates the theoretical relationships identified in previous research on corruption tolerance of civil servants. Based on the literature review, 21 variables were identified in 9 groups. For each variable, questions were constructed to examine their relationship with whistleblowing intentions. The survey questions were based on the assumption that the 48 civil servants had already detected irregular behavior before. The survey did not aim to evaluate civil servants' skills in identifying irregular behavior, but rather to assess how they respond after observing possible irregular behavior. In this way, the results obtained do not fully account for limited rationality. The instrument consists of 80 questions, of which 77 are Likert-scale items with scores ranging from 1 to 4. The instrument's structure is shown in Table 1. For the family nucleus (a single question), non-merit-based hiring (another single question), and hierarchical level (another single question), multiple-choice questions with a single answer were used. The scores were assigned as shown in Annex 1.

Table 1. Variables Selected for Research

SET OF VARIABLES	VARIABLES	DESCRIPTION	NUMBER OF QUESTIONS
Attitude, desire, and intention to act corruptly	Favorable attitude towards corruption	Questions about corrupt situations were evaluated using adjectives such as "good" or "bad," "ethical," or "irregular." Higher scores were given to answers that approved of unethical situations.	4
	Intent to act corruptly	The possibility of participating in a corrupt action was investigated. Higher scores were given to those answers that agreed with this possibility.	1
Rationalization	Presumption of innocence	Participants were asked about their perception of the need to have sufficient evidence to make a whistleblowing. Responses stating the need for evidence before whistleblowing were scored higher.	1

(continued)

SET OF VARIABLES	VARIABLES	DESCRIPTION	NUMBER OF QUESTIONS
	Strict adherence to procedures	Participants were asked about their perceptions of nonresponsibility in whistleblowing when they strictly follow procedures. Statements about a lack of responsibility were given higher scores.	4
	Respect for the hierarchy and division of functions	Participants were asked about who they considered responsible for the whistleblowing. Responses that place responsibility with the direct manager or the competent official within the governmental entity were scored higher.	1
	Not thinking about the consequences (no one is harmed)	Participants were asked whether they considered who might be affected or what the consequences of a corrupt action they observed might be.	1
Normalized corruption	Normalization of corrupt conduct	Participants were asked whether they considered procurement irregularities and patronage to be normal behaviors. Higher scores were given to those answers that agreed that these are normal practices of public administration.	16
Perception of impunity or organizational powerlessness	Impunity perception/ Organizational powerlessness	Participants were asked about the effectiveness of the justice system, control entities, and public organizations in investigating and punishing corrupt actions. Higher scores were given to employees who agreed that there is an inability to punish corrupt individuals.	7
Retaliation	Retaliation against the whistleblower	The public servants were asked about the reprisals whistleblowers could face. Those who expressed the possibility of whistleblowers receiving retaliation scored higher.	10

(continued)

SET OF VARIABLES	VARIABLES	DESCRIPTION	NUMBER OF QUESTIONS
Perceived vulnerability	Unfair wages	Participants were asked about the fairness of their remuneration relative to their responsibility levels, coworkers' salaries, and salaries that could be earned in a private company. Those who considered themselves to disagree with these statements were given higher scores.	3
	Non-merit-based hiring	This question explored the type of hiring of public servants in the organization; the lowest score was given to civil servants selected through merit.	1
	Family	Regarding family composition, officials who reported caring for minor children or their parents received higher scores.	1
Hierarchical level	Hierarchical level	The hierarchical level of the civil servants at the time of the survey was asked about. Higher scores were given at the lowest levels (technical and care) and higher at the advisory and managerial levels.	1
Emotions	Apathy	Participants were asked whether they thought of phrases such as "this is not going to change anything" and "whistleblowing is an unnecessary worry" when evaluating whether to whistleblow. Higher scores were given to those who claimed to agree with the statements presented.	2
	Fear	Participants were asked if they felt fear when they observed a possible corrupt situation. A higher score was given to civil servants who reported feeling fear.	2
	Anger	Participants were asked if they felt anger when they observed a possible corrupt situation. A higher score was given to civil servants who reported feeling anger.	2
	Loyalty	Participants were asked whether they would remain loyal and silent in the face of potential corruption.	2

(continued)

SET OF VARIABLES	VARIABLES	DESCRIPTION	NUMBER OF QUESTIONS
Whistleblowing intention (response variables)	Whistleblowing intention	Civil servants were asked whether they would act as whistleblowers when they witnessed corruption. A higher score was given to cases in which the employee agreed to whistleblowing.	6
	Intention to remain silent	Civil servants were asked whether they would remain silent if they witnessed an act of corruption. A higher score was given to cases in which the employee agreed to whistleblowing.	8
	Internal whistleblowing	Participants were asked to whom they would file a whistleblowing. Responses indicating agreement to inform the line manager or the competent official within the governmental entity were scored higher.	3
	External whistleblowing	Participants were asked with whom they would file a whistleblower complaint. Responses that said to inform the controlling governmental entity outside the organization were scored higher.	4

Source: Own elaboration.

The digital instrument was administered to civil servants of a single governmental entity in Bogotá, Colombia. A simple random sample of 48 civil servants was drawn from a population of 160, with a significance level of 90 % and a 10 % error. In all cases, anonymity was guaranteed to mitigate bias derived from the nature of the questions. Observations were cross-sectional.

The data obtained were used to build a model to explain the whistleblowing intention, the intention to remain silent, and the types of whistleblowing (internal or external). The significant relationships between the variables were identified through multiple linear regressions, in which the estimates were derived from the average scores of the independent variables. All calculations were performed in R.⁴⁵ The model was corroborated using the same variables in a binomial logistic regression model, yielding similar results.

⁴⁵ R-project, *R: A Language and Environment for Statistical Computing*, version 4.3.1, R Foundation for Statistical Computing, <https://www.R-project.org/>.

Given the complexity of human behavior and the dynamics of its interactions within governmental organizations, a computer simulation of a system's dynamics (System Dynamics Modeling) was used. A one-week simulation time step was used to provide detailed insights into the evolution and interactions of the system's variables affecting public corruption tolerance over this timeframe. It was also used to conduct sensitivity analyses. Finally, the model structure was verified using atypical data inputs to ensure consistent outputs. The simulation was developed in Vensim PLE software.⁴⁶

Context of the Analyzed Governmental Entity

The governmental body where the study was conducted is situated in Bogotá D.C., Colombia. According to Transparency International's Corruption Perception Index,⁴⁷ Colombia scored 39 points in 2022, while the average score between 2012 and 2021 was 37.1. These results ranked the country 91st out of 180 countries evaluated, showing a slight improvement from its previous average position of 94th. According to the Global Corruption Barometer,⁴⁸ the country ranks relatively middle in Latin America and the Caribbean. Additionally, 48 % of Colombian respondents perceive that most government officials are involved in corrupt activities. This supposition approaches the regional average of 49 %.

Colombia's Departamento Administrativo de la Función Pública⁴⁹ is the government agency in charge of managing government employment. Their data shows that in 2020, in Bogotá D.C., there were 194 governmental entities with an average of 290 civil servants (38 % technical and assistance level, 54 % professionals, and 8 % advisors and managers) with an average annual salary of US\$1,468.⁵⁰ The governmental entity analyzed has approximately 160 employees at all levels, and its average compensation is very close to the average for government entities but is well above the city's per capita income, expressed in current prices, reported by the World Bank Statistics⁵¹ for 2020, which was US\$5340. The distribution of

⁴⁶ Ventana Systems Inc., *Vensim PLE (version 9.4)*, accessed February 10, 2024, <https://vensim.com/>.

⁴⁷ Transparency International, "2022 Corruption Perceptions Index."

⁴⁸ Coralie Pring and Jon Vrush, *Global corruption barometer, Latin America & the Caribbean 2019 - citizens' views and experiences of corruption* (Berlin: Transparency International, 2019), 1–58, <https://digitalcommons.fiu.edu/cgi/viewcontent.cgi?article=1154&context=srhreports>.

⁴⁹ Departamento Administrativo de la Función Pública, "Caracterización del empleo público 2017-2020," <https://www.funcionpublica.gov.co/web/sie/microdatos>.

⁵⁰ This value was calculated using the official exchange rate for the year ended December 31, 2020, and is expressed in the prevailing prices for the same year.

⁵¹ World Bank Group, *GDP per capita (current US\$) - Colombia*, <https://data.worldbank.org/indicator/NY.GDP.PCAPCD?locations=CO>.

employees is similar to general statistics (13 % managers, 63 % professionals, 25 % technical and assistant roles).

On the other hand, citizens' reluctance to report acts of corruption in Colombia, as outlined by Corporación Transparencia por Colombia,⁵² stems from concerns with harms against of life, integrity, freedom, and personal security (27 %), damaging personal reputation (23 %), lacking sufficient information (21 %), and fear of retaliation (15 %). In addition, Reyes Beltrán and Rodríguez Villabona⁵³ recognize the intertwining of corruption, illegality, and politics in Colombia's social structure. They highlight how corruption infiltrates various sectors, including government, judiciary, and law enforcement, often through practices such as campaign financing and influence peddling. Additionally, they associate corrupt behavior among the population with mafia influence, amoral familism, and patronage.

Results

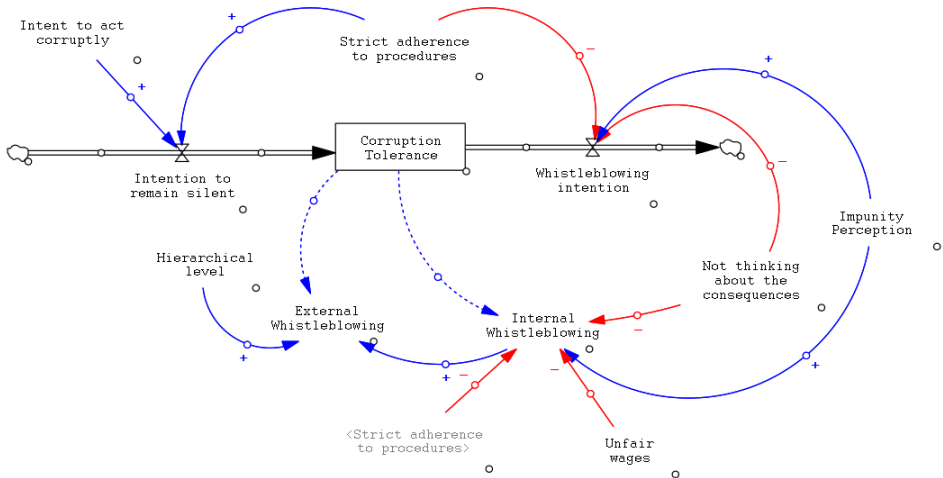
Public Corruption Tolerance Model

Tolerance to corruption was defined as the difference between the average score for whistleblowing intention and the average score for remaining silent. Thus, if the level of tolerance for corruption is negative, the model predicts that the public official will tend to act as a whistleblower. In this case, estimates are made to predict whether whistleblowing occurs within the same government entity and/or is reported to an external governmental oversight entity. Conversely, if the corruption tolerance level is positive, the model predicts that the respondent is not prepared to act as a whistleblower, and the values for internal and external whistleblowing will be 0. These restrictions are presented as dotted lines. Figure 1 shows the model.

⁵² Corporación Transparencia por Colombia, *La denuncia de la corrupción*, 29.

⁵³ Andrés Abel Rodríguez Villabona and Pablo Ignacio Reyes Beltrán, "Repensar la corrupción en Colombia: el fenómeno de la captura y la cooptación reconfigurada del Estado," *Novum Jus* 17, no. 2 (2023), 147–70, <https://doi.org/10.14718/NovumJus.2023.17.2.6>.

Figure 1. Public Corruption Tolerance Model



Source: Own elaboration using Vensim PLE.⁵⁴

The model's input variables refer to individual and contextual factors that affect public servants. Thus, if we wish to simulate a government employee with a high level of tolerance to corruption, it would be dealing with an individual who focuses mainly on complying with procedures and perceives that as result of the whistleblowing there is a high probability of sanction, does not question the consequences of the act of corruption they observe, and if offered to participate, would accept considering that it is an opportunity to obtain personal benefits.

On the contrary, if the civil servant is reluctant to participate in a corrupt action, they are aware of the consequences of the irregular action, do not focus on compliance with the procedure but on the results of their work, and consider that there is a low probability of sanction for whistleblowing, they will have a negative level of tolerance to corruption. In this case, the public servant will proceed to appraise how the whistleblowing action should be performed: 1) following the regular procedure within the organization; 2) before an external control organization or court; or 3) following both paths. The decision to act as a whistleblower within the organization will again depend on its focus on results and not on procedure, awareness of the consequences of corrupt action, the perception of a low probability of sanction because of whistleblowing, and how it will affect the remuneration

⁵⁴ Ventana Systems Inc., *Vensim PLE (version 9.4)*.

of other employees who perform the same function or have a similar position in the private sector. On the other hand, the intention to blow the whistle before an external governmental control entity is determined by the intention to act as a whistleblower within the organization and by the civil servant's hierarchical level. The results show that employees at lower hierarchical levels are more likely to engage in this type of whistleblowing. The simulation suggests that, in most cases, employees who engage in external whistleblowing have already done so within their organization.

Table 2 shows the statistics for the estimates of the four model variables: intention to remain silent (IRS), whistleblowing intention (WI), internal whistleblowing (IW), and external whistleblowing (EW). The linear regression test is presented in Annex 2.

Table 2. Linear Model Statistics

Variable	Estimate IRS	Estimate WI	Estimate IW	Estimate EW
Intercepted	1.8102***	4.05441***	4.06519***	-0.8963*
SAP	-1.7543**	-0.82570***	-0.53700***	
SAP ²	0.6813***			
IAC	0.4756***			
NC		-0.21874**	-0.22243***	
IP		0.38140***	0.52076***	
UW			-0.31542**	
IW				0.7150***
HJ				0.4618**

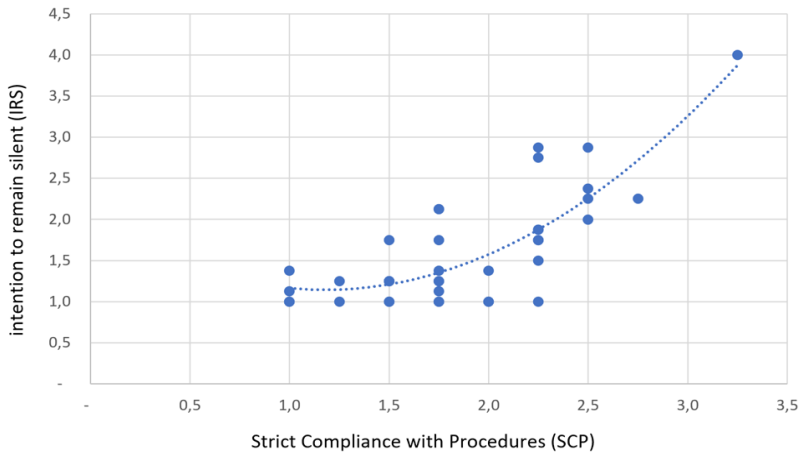
Note. IRS: intention to remain silent, WI: whistleblowing intention, IW: internal whistleblowing, EW: external whistleblowing. *** <0.01, ** <0.05, * <0.1

Source: Own elaboration using R project.

Intention to remain silent (IRS). The linear estimation of interviewees' scores on questions about their IRS yielded an adjusted R² of 0.6854 and showed significant relationships with the variables strict adherence to procedures (SAP) and intent to act corruptly (IAC). In both cases, the coefficients were positive. Table 2 presents

the statistics. It is important to note that, in the SAP variable, a quadratic term was observed in the IRS estimation, as shown in Figure 2.

Figure 2. Relationship between IRS and SAP



Source: Own elaboration.

Whistleblowing intention (WI). The linear estimate of the average interviewee score on questions about their WI had an adjusted R² of 0.5335. and showed significant relationships with the variables of SAP, impunity perception or organizational powerlessness (IP), and not thinking about the consequences of corrupt conduct (NC). The variables NC and SAP decrease the intention to whistleblow, while the IP presents a positive sign. Table 2 presents the statistics.

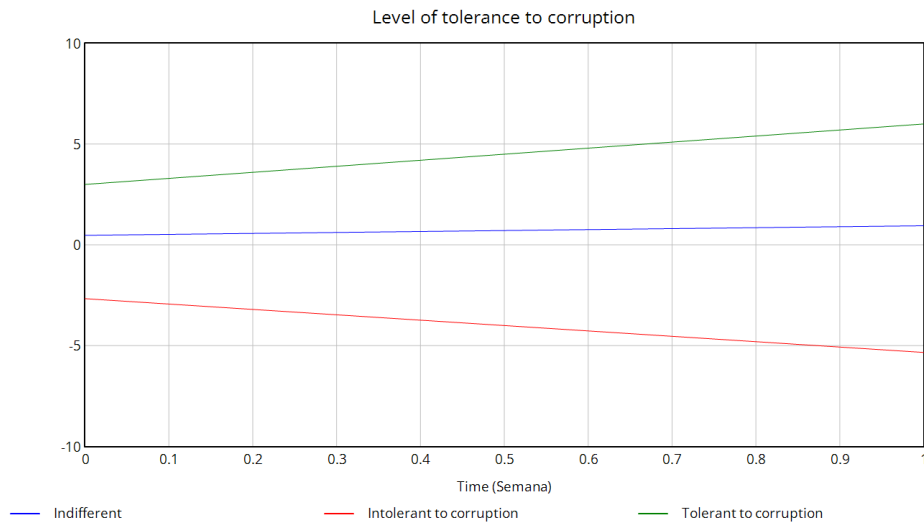
Internal whistleblowing (IW). The average scores for questions about whistleblowing to a hierarchical superior or the competent office within the governmental entity showed significant relationships with the variables SAP, NC, IP, and the perception of unfair wages (UW). In this way, the variables SAP, NC, and UW reduced the estimate of internal whistleblowing, whereas IP encouraged it. The adjusted R² was 0.6229. Table 2 presents the statistics.

External whistleblowing (EW). The average score for questions assessing the civil servant's intention to whistleblow to an external governmental control body within their organization was estimated using the significant variables IW and hierarchical level (HJ), with an adjusted R² of 0.4975. In both cases, the relationship is positive: the higher the intention to whistleblow within the entity and the lower

the whistleblower’s hierarchical level, the greater the intention to whistleblow to an external institution. Table 2 presents the statistics.

Robustness: These scenarios of tolerance and intolerance to corruption were used to test the robustness of the model, incorporating an additional one that refers to the indifferent employee, that is, they obtain scores in the input variables of the model of 2.5 on a scale of 1 to 4 used in the collection of the data. Figure 3 displays the input and output data of the simulation presented in Annex 3.

Figure 3. Scenario Simulation Results



Source: Own elaboration using Vensim PLE.⁵⁵

The simulation shows that indifferent civil servants tend to tolerate corruption, albeit with scores very close to 0, while those with extreme scores (tolerant or intolerant) reinforce this behavior.

Analysis and Discussion

As observed in the results section, the constructed model identifies 7 significant variables among the 21 variables evaluated to explain corrupt tolerance and the types of whistleblowing among civil servants. The model’s sensitivity analysis was

⁵⁵ Ventana Systems Inc.

performed by varying each variable by 1 unit and keeping the other constants at scores 1, 2, 3, and 4. As a result, Table 3 presents the averages of variations in the output variables (tolerance for corruption, internal and external whistleblowing) for each increase in the input variable.

Table 3. Model Sensitivity Analysis

<i>Variable</i>	<i>Tolerance for Corruption</i>	<i>Internal Whistleblowing</i>	<i>External Whistleblowing</i>
Strict adherence to procedures	1.51	-0.54	-0.38
Intent to act corruptly	0.31	0	0
Impunity perception	-0.27	0.34	0.24
Not thinking about the consequences	0.22	-0.22	-0.16
Unfair wages	0	-0.32	-0.23
Hierarchical level	0	0	0.46

Source: Own elaboration using Vensim PLE.⁵⁶

SAP is the input variable with the greatest sensitivity to the output variables. This variable corresponds to what Ashforth and Anand⁵⁷ define as a rationalizing thought, using which the employee seeks to legitimize the corrupt acts they witness. These rationalizations are effective at mitigating the dissonance and guilt that arise when participating in a corrupt act. To understand this rationalizing mechanism, Ashforth and Anand⁵⁸ show that the routinization produced by procedures weakens awareness of the moral issue at stake in a given action by eliminating discrete or reflective decision points, reducing the need to think. The routinization allows corrupt acts to be divided into specialized tasks, reducing individuals' ability to identify irregular actions, encouraging the dilution of responsibility, and making it easy to deny any irregular situation if it is not directly related to the employee's task within the procedure.

⁵⁶ Ventana Systems Inc.

⁵⁷ Ashforth and Anand, "The Normalization of Corruption in Organizations," 17.

⁵⁸ Ashforth and Anand, 12.

SAP leads public servants to affirm that corruption occurred due to external forces beyond their control, which, according to Sykes and Matza,⁵⁹ is a form of rationalization based on “denial of responsibility.” In this case, public servants prepare the way by deviating from the dominant normative system without a frontal assault on the norms themselves, through this responsibility-denying rationalization.

On the other hand, the division of labor required by routines renders lower-ranking civil servants powerless, leading them to omit their moral responsibilities and leaving difficult ethical decisions to top managers. In addition to the above, Palmer⁶⁰ mentions that “the division of labor also diffuses responsibility, such that participants in one part of an organization sometimes do not feel obligated to (in fact, might even be forbidden from) point(ing) out the wrongful character of the behavior of employees in another part of the organization.”⁶¹

Additionally, routines and the division of functions can lead employees to lose sight of the purpose of the process. Literature review on tolerance to corruption revealed six rationalizing patterns: 1) “everyone does it”; 2) “nobody got hurt”; 3) “doing this for a higher purpose”;⁶² 4) “I cannot prove it.”; 5) “everything was done according to established procedures”; 6) “I informed the competent officer.”⁶³ In this way, the results showed significant relationships between corruption tolerance and two of these rationalizations: 1) compliance with procedures associated with statements such as “if the procedure is complied with there is nothing irregular” or “it is impossible to report because everything is supported” that has a double effect increasing the intention not to report and decreasing the intention to report; and 2) not thinking about the consequences of corrupt actions reflected in statements such as “nobody got hurt.” For this reason, strict adherence to procedures is also useful to legitimize remaining silent. Thus, when civil servants strictly comply with the organization’s established procedures, they no longer feel responsible for whistleblowing.

Moreover, establishing routines and dividing functions can lead employees to lose sight of the process’s purpose. This leads to a loss of focus on the consequences of corrupt actions. This research shows that failing to consider the consequences

⁵⁹ Sykes and Matza, “Techniques of Neutralization,” 667.

⁶⁰ Palmer, “Extending the process model of collective corruption,” 116.

⁶¹ Palmer, 115.

⁶² Fleming et al., “How Corruption is Tolerated in the Greek Public Sector,” 202.

⁶³ Peralta Borray, Acuña, and Zapata, “Grounded Theory of Tolerance of Corruption,” 217.

of irregular action reduces the intention to act as a whistleblower. Indeed, Ashforth and Anand⁶⁴ identified “denial of the injury as a rationalizing ideology,” which comes into play when the consequences of corrupt behavior cannot be seen physically or will not appear until the future. In these cases, public servants cannot easily forecast the consequences.

For its part, the “impunity perception” or “organizational powerlessness” had also been identified in investigations into tolerance of corruption, referring to the perception among civil servants that the system is incapable of sanctioning corruption. For Fleming et al.,⁶⁵ the lack of punishment not only fosters but also perpetuates corruption through apathy. However, the model showed that perceptions of impunity increase whistleblowing intention, especially within the organization. This can be explained by the fact that employees perceive internal whistleblowing as less effective than reporting to an external body. In this sense, the civil servant who observes an irregular situation fulfills their formal duty to whistleblow to their hierarchical superior or the competent office within the entity, without expecting effective sanctions against corrupt individuals. The perception of impunity can serve as a rationalization, leading a public servant to feel they have fulfilled their duty by reducing dissonance and guilt.

Unfair wages variable, which refers to the perception of employees about the excess or defect of their salary in comparison with the average compensation within government bodies in which they work, or compared to the salary they could obtain in similar positions in the private sector, leads to the incorporation of this variable in the analysis of internal whistleblowing intentions. Literature review shows too, that the discussion on salaries around corruption is a recurring element and focuses on determining whether low salaries are a variable that favors public corruption⁶⁶ because it represents an incentive to participate in irregular actions, or if, on the contrary, high salaries are associated with higher levels of corruption, or if they have no impact on the decision to act corruptly.⁶⁷ In cases of corruption tolerance, salaries are among the elements officials seek to protect by choosing not to denounce

⁶⁴ Ashforth and Anand, “The Normalization of Corruption in Organizations,” 18.

⁶⁵ Fleming et al., “How Corruption is Tolerated in the Greek Public Sector,” 216.

⁶⁶ Vivi Alatas et al., “Subject pool effects in a corruption experiment: A comparison of Indonesian public servants and Indonesian students,” *Experimental Economics* 12, no. 1, (2009), 113–32, <https://doi.org/10.1007/s10683-008-9207-3>; Robert Klitgaard, “Incentive myopia,” *World Development* 17, no. 4 (1989), 447–59, [https://doi.org/10.1016/0305-750X\(89\)90254-4](https://doi.org/10.1016/0305-750X(89)90254-4).

⁶⁷ Daron Acemoglu and Thierry Verdier, “The Choice between Market Failures and Corruption,” *American Economic Review* 90, no. 1 (2000), 194–211, <https://doi.org/10.1257/aer.90.1.194>.

a corrupt act.⁶⁸ In this view, high salaries relative to similar positions within the organization or in the private sector can create incentives to tolerate corruption.⁶⁹

The above is consistent with the results obtained from the constructed model of tolerance to corruption. The model shows that perceptions of remuneration far from the average reduce internal whistleblowing. These circumstances lead to defending the position that advocates offering competitive wages based on workers' skills: "A more professional, merit-based civil service that is paid and trained well and rewarded for competence is the bedrock on which any corruption reforms must be built."⁷⁰

Finally, analysis of external whistleblowing reveals that, in addition to the intention behind internal whistleblowing, the respondent's hierarchical level is also important. Results show that the lower a civil servant's hierarchical level in the organization, the greater their intention to whistleblow to an external entity. This observation is contrary to what is reported in the reviewed literature. From this perspective, it is assumed that this kind of complainant is more likely to face retaliation for whistleblowing. However, this phenomenon can also be explained, as Fleming et al.⁷¹ suggested, by the fact that a higher hierarchical level may conceal corrupt behavior to protect its own corrupt acts.

Conclusions and Recommendations

Regarding the study's conclusions and possible recommendations, it is worth noting that its scope is exploratory, given the size of the analyzed sample and its focus on a single governmental organization. This limits the model's validation. Additionally, tolerance to corruption and its measurement can be influenced by historical context and social norms.⁷² Studies on corruption tolerance should be replicated across different cultures and geographic locations. However, this research offers a working framework for other studies that aim to expand the use of the analysis tools presented here.

⁶⁸ Fleming et al., "How Corruption is Tolerated in the Greek Public Sector," 205.

⁶⁹ Peralta Borray, Acuña, and Zapata, "Grounded Theory of Tolerance of Corruption."

⁷⁰ Susan Rose-Ackerman and Bonnie J. Palifka, *Corruption and government causes, consequences, and reform* (Cambridge: Cambridge University Press, 2016), 174.

⁷¹ Fleming et al., "How Corruption is Tolerated in the Greek Public Sector," 214.

⁷² Liu, Juang, and Yu, "Understanding Corruption with Perceived Corruption," 208.

This model shows that SAP by civil servants has the greatest effect on tolerance of corruption. An explanation may come from the *normalization of corruption theory*, which holds that the routinization of specific tasks mitigates dissonance and guilt, thereby reducing moral conscience and allowing the dilution or denial of responsibility for whistleblowing. Moreover, lengthy procedures with high task segmentation reduce understanding of the process's purposes and, therefore, the consequences of corruption. This mechanism is typical of government agency bureaucratic management systems (GABMS), in which control systems and incentives expedite documentation and compliance with procedures. The deactivation of this type of *corruption normalization in the civil service* requires stricter regulations that extend public servants' responsibilities beyond their purview and into the entire administrative procedures they undertake. Open, lifelong awareness-raising spaces about the consequences of corrupt behaviors are also needed.

Also, organizations need to strengthen their control systems over process outcomes. This will have an additional effect: in addition to creating incentives for whistleblowing, trustworthy whistleblowing systems will reduce the perception of impunity. While this study's results show that perceptions of impunity affect whistleblowing intentions, especially within the organization, it is also true that public servants do not expect such complaints to result in meaningful sanctions. In this sense, efforts to support ongoing impunity openly contradict personal commitments to reducing corruption. On the contrary, studies show that *indifference to input variables breeds tolerance for corruption*. Therefore, it is essential to develop legal awareness and training campaigns, especially on whistleblowing, to reduce the normalization of corrupt behavior among civil servants and increase the likelihood of fair investigations into irregularities.

A clear priority is to establish controls in personnel selection to identify civil service candidates who intend to act corruptly, given that the merit selection process was not found to be a significant variable in explaining tolerance for corruption. More importance should be placed on appraising attitudinal components related to tolerating corrupt acts in the workplace. This not only reduces tolerance for corruption but also prevents irregular actions. In line with Rabl and Kühlmann's⁷³ recommendations, counteracting indifferent attitudes towards corruption among workers requires adjusting organizational recruitment processes to attract candidates who are better able to resist it. Though more will be needed to shift the organizational

⁷³ Rabl and Kühlmann, "Understanding corruption in organizations," 490.

culture from one that normalizes corruption to one of whistleblowing, measures to extend public servants' responsibilities and to create effective procedures and controls could meaningfully contribute to these ends.

Finally, offering fair and competitive salaries for public employees should be considered. A salary perceived as distant from the average (either among co-workers or in other organizations) reduces whistleblowing intentions among public servants, who prefer to protect their income by tolerating corruption. The findings initially suggest a possible relationship among tolerance of corruption, above-average remuneration, and high hierarchical levels within the organization. In line with Fleming et al.,⁷⁴ the interaction of these factors may favor concealing corrupt actions in order to protect top positions and privileges within the organization.

Limitations of the model and future research. It is important to mention that this research did not evaluate Colombian cultural sociolegal aspects. Incorporating variables such as *amoral familism*⁷⁵ could enrich the model under discussion. These behaviors extend across all sectors and segments of society, driven by a preference for resolving conflicts on one's own rather than engaging with public state procedures or institutions. Research to date suggests that amoral familism would affect public servants' willingness to act as internal whistleblowers, especially when there is a low expectation that real sanctions will be imposed.

Understanding and changing public servants' perceptions of impunity will depend on the capacity of Colombian government bodies, judges, and courts to sanction corruption. But it also calls for future research into aspects of Colombian legal culture, such as "right to legal defense," "judicial independence," "ignorance of the law," "professional secrecy,"⁷⁶ and "presumption of innocence."⁷⁷

Finally, it is important to note that, in the model discussed here, the *Emotions* variable had no significant effect. However, qualitative research on tolerance to corruption in organizations identifies this variable as a recurring analytical category. This could be improved by incorporating participants' socioemotional attitudes (anger/fear)

⁷⁴ Fleming et al., "How Corruption is Tolerated in the Greek Public Sector," 205.

⁷⁵ *Amoral familism* refers to core decision making that maximizes short term material advantage of the nuclear family, instead of society in general, while assuming that others will do the same. Rodríguez Villabona and Reyes Beltrán, "Repensando la corrupción en Colombia," 154.

⁷⁶ Germán Silva-García, *El mundo real de los abogados y de la justicia. Tomo IV: Las ideologías profesionales* (Bogotá, D.C.: Universidad Externado de Colombia, 2001), 1–277.

⁷⁷ Peralta Borray, Acuña, and Zapata, "Grounded Theory of Tolerance of Corruption," 217.

towards public corruption. Tirado and Nieto⁷⁸ found that public servants who reported feeling intense or very intense anger when thinking about corrupt actions were also, on average, more likely to act as whistleblowers. On the other hand, those who expressed intense or very intense fear in similar circumstances tend to keep silent. Measuring socioemotional attitudes towards corruption in future research will provide additional understanding of the links among socioemotional responses, rationalization, and subsequent whistleblowing.

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⁷⁸ Tirado and Nieto, "Miedo, enojo y denuncia," 50.

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Annex 1. Scores Assigned in the Survey

Answer the questions in the questionnaire on the Likert scale	Score	Answer on the structure of the family nucleus	Score	Answer on the hierarchical level	Score	Answer on the merit-based hiring	Score
Not applicable	N/A	Only me	0	Care	4	N/A	N/A
Disagree	1	My partner and I	1	Technician	4	Career civil servants	1
Partially disagree	2	My parents and I	2	Professional	3	Temporary public servants	2
Partially agree	3	My partner, my children, and I	3	Adviser	2	Political appointee	3
Agree	4	My children and I	4	Managerial	1	Personal services contractor	4

Source: Own elaboration.

Annex 2. Linear Regression Tests

Statistics Estimation of IRS

Variable	Estimate	Std. Error	T-value	Pr (> t)	Shapiro-Wilk test	Studentized Breusch-Pagan test	Durbin-Watson test	RESET test	Pearson CRP	Pearson CRP ²	Pearson IAC
Intercepted	1.8102	0.6594	2.745	0.009590	W = 0.9542	BP = 2.9503	DW = 1.827	RESET = 0.17861			
SAP	-1.7543	0.6989	-2.510	0.016998		df = 3		df1 = 6	1		
SAP²	0.6813	0.1773	3.844	0.000506	p-value = 0.1225	p-value = 0.3994	p-value = 0.5564	df2 = 28	0.9845	1	
IAC	0.4756	0.1693	2.808	0.008194				p-value = 0.9804	0.2317	0.2125	1

Source: Own elaboration using R project.

Statistics Estimation of WI

Variable	Estimate	Std. Error	T-value	Pr (> t)	Shapiro-Wilk test	Studentized Breusch-Pagan test	Durbin-Watson test	RESET test	Pearson CCO	Pearson CRP	Pearson PIM
Intercepted	4.05441	0.54218	7.478	1.12E-8	W = 0.97494	BP = 4.2701	DW = 1.4694	RESET = 1.5445			
NC	-0.21874	0.08223	-2.660	0.01183		df = 3		df1 = 6	1		
SAP	-0.82570	0.18218	-4.532	6.87861E-05	p-value = 0.5409	p-value = 0.2337	p-value = 0.07968	df2 = 28	0.01554	1	
IP	0.38140	0.12087	3.155	0.00335				p-value = 0.2005	-0.3514	0.06622	1

Source: Own elaboration using R-project.

Statistics Estimation of IW

Variable	Estimate	Std. Error	T-value	Pr (> t)	Shapiro-Wilk test	Studentized Breusch-Pagan test	Durbin-Watson test	RESET test	Pearson CCO	Pearson CRP	Pearson PIM	Pearson SI
Intercepted	4.06519	0.63839	6.368	3.28E-07	W = 0.98214	BP = 5.6511	DW = 1.9084	RESET = 1.8561				
NC	-0.22243	0.07439	-2.990	0.00524		df = 4		df1 = 8	1			
SAP	-0.53700	0.16711	-3.214	0.00293	p-value = 0.7919	p-value = 0.2268	p-value = 0.3434	df2 = 25	0.01554	1		
IP	0.52076	0.11087	4.697	4.49E-05				p-value = 0.1133	-0.35145	0.06622	1	
UW	-0.31542	0.14507	-2.174	0.03696				0.09824	-0.17727	-0.20191	1	

Source: Own elaboration using R-project.

Statistics Estimation of EW

Variable	Estimate	Std. Error	T-value	Pr (> t)	Shapiro-Wilk test	Breusch-Pagan test	Durbin-Watson test	RESET test	Pearson DI	Correlation NJ
Intercepted	-0.8963	0.8805	-1.018	0.3156	W = 0.96496	BP = 1.2451	DW = 2.1346	RESET = 1.4145		
IW	0.7150	0.1152	6.208	4.12E-07		df = 2		df1 = 4 df2 = 31	1	
HJ	0.4618	0.2268	2.036	0.0493	p-value = 0.274	p-value = 0.5366	p-value = 0.6647	p-value = 0.2524	-0.2811	1

Source: Own elaboration using R-project.

Annex 3. Simulation Result Model

Simulation Result Model Based on Linear Regressions

<i>Variable</i>		<i>Tolerant</i>	<i>Indifferent</i>	<i>Intolerant</i>
Input variables	CP	4.0	2.5	1.0
	IAC	4.0	2.5	1.0
	PIM	1.0	2.5	4.0
	BCC	4.0	2.5	1.0
	YES	4.0	2.5	1.0
	NJ	1.0	2.0	4.0
Output variables	TC	3.0	0.5	-2.8
	IDI	-	-	4.0
	IDE	-	-	3.8

Source: Own elaboration using Vensim PLE.