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INSTITUTIONAL ENVIRONMENT AND PERFORMANCE SURVEY (EDI) GENERAL METHODOLOGY

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NATIONAL ADMINISTRATIVE DEPARTMENT OF STATISTICS

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PRESENTATION

The National Administrative Department of Statistics (DANE), as the coordinating entity of the National Statistical System (NSS), and in the framework of the Statistical Planning and Harmonization project, works toward the strengthening and consolidation of the NSS through the following processes: the production of strategic statistics; the generation, adaptation, adoption and dissemination of standards; the consolidation and harmonization of statistical information and the coordination of instruments, actors, initiatives and products. These actions aim at improving the quality of the strategic statistical information, its availability, timeliness and accessibility to meet the high demand that there is for it.

Aware of the need and obligation of providing users with better products, DANE developed a standard guide for the presentation of methodologies, which contributes to the visualization and understanding of the statistical process. With this instrument, the entity developed the methodological papers of its statistical operations and studies that are made available to specialized users and the public in general. Those papers present in a standard, complete and easy-to-read manner the main characteristics of the technical processes and sub-processes of each study, thus enabling its analysis, control, replicability and evaluation.

This set of papers promotes transparency, trust and credibility of the technical quality of the entity for a better understanding and use of statistical information. Such information is produced under the principles of coherence, comparability, comprehensiveness and quality of statistics.

INTRODUCTION

In Colombia, after the promulgation of the Political Constitution of 1991, the kind of state intervention and its scope were modified, directing its development toward a model of decentralization and deconcentration of functions. This change at the macro-institutional level has meant that organizations should adapt to the new powers and responsibilities of the structure of the Colombian state; where it becomes increasingly necessary to monitor the actions of public entities within the framework of transparency and accountability. Therefore, it is necessary to analyze the capacity and efficiency of the state in order to implement such powers of the new public management model, as well as their transformation into public policies.

Information pertaining to the public service, in the domain of public administration, is limited and usually responds to specific needs, which have not had the necessary continuity, so that the level of development of organizations in a given time and their change over time can be described.

Existing assessments in the matter tend to emphasize on topics related to the detection of risks of corruption in public administration, in order to adopt a preventive policy. However, both the structure, the network of relationships and motivations of bureaucratic organizations are varied to focus on a single dimension of their behavior. This unidimensional outlook is translated into the formation of limited diagnostic frameworks that prevent policies to be formulated and evaluated in a consistent and coherent manner.

Recent measurements, which seek a direct and objective approach on the status of public entities, such as the Transparency Index (National and Departmental) or the Integrity Index prepared by the Attorney General's Office, present a line of study aimed at identifying risk levels with respect to corruption acts. In that regard, it should be noted that the measurement of performance and organizational change can be seen from many standpoints that enrich and give greater elements of analysis for the study of public administration. For this reason, the establishment of a set of indicators is required, where the formation of a classification with respect to the development of public organizations is an improvement.

In order to avoid such difficulties and minimize the analytical biases that derive from measurements in this area, the need arose to establish additional information pertaining to the behavior of public organizations, based on the detection of attitudes, motivations and perceptions that can be established by means of the Institutional Performance and Environment Survey (EDI, for its acronym in Spanish).

Overall, the continuous measurement performed by means of the EDI, enables identifying the institutional evolution and development of public organizations. In this sense, the EDI provides Colombian society with strategic information on the perception that public officials[1] have with respect to the institutional development of public entities. Also, it will support the formulation of policies, both at the level of the entire public sector and within the domain of each public entity.

As a medium term purpose, the EDI aims to become the input that complements the evaluation of institutional reforms in the field of public administration performed by other entities, and also as a source for the generation of studies and analysis on the behavior of public entities at the national level.

The fact of having a greater reliability and timeliness of information on the aspects studied, will aim at promoting social control through mechanisms such as citizen oversight, so that the exercise of checks and balances as a *sine qua non* condition of democratic governance is increasingly institutionalized.

In order to consolidate a single paper for enquiry that meets the normalization and standardization criteria, which are at the foundations of the NSS, the methodology that serves as guidance for the development of the survey is presented. This methodological paper consists of six chapters: the first chapter lists the main backgrounds of the study; the second outlines the elements that compose the survey design; the third chapter describes the relevant aspects of the statistical production phase; the fourth sets forth the phase of analysis of the results; the fifth addresses the phase of the dissemination of information, and finally, the sixth lists the main technical and methodological documents used in the development of the study.

[1] The classification of public officials that is used in public administration is: a) public employees (who may be of free appointment and removal or tenured), b) official workers (with a greater presence in the state-owned industrial and commercial enterprises), c) term (State-owned Social Enterprise's Managers, Comptroller, Attorney), e) elected. The EDI is focused on the officials of the first category.

1. BACKGROUND

Colombian The study pertaining to the performance of public organizations began as a coordinated effort between DANE, the *Corporación Transparencia por Colombia*[2], the National Planning Department (DNP) and the Presidential Program to Combat Corruption.

DANE undertook the organization of the operational process and *Transparencia por Colombia* provided a structured questionnaire. The outcome of this joint work was a memorandum / document that posed the carrying out of the National Institutional Performance Survey (EDI). Further, it would later be extended at the departmental level with the Departmental Institutional Performance and environment Survey (EDID, for its acronym in Spanish), as a complementary exercise that would provide information at the territorial level.

In that sense, a theoretical framework was adapted and between 2003 and 2005, the information collection and analysis processes were conducted, which constituted a source of approach to the phenomena under study. Given this experience, in 2007 DANE assumed the responsibility for this study, including it as an ongoing research with respect to the political and cultural statistics program of DANE.

As surveys have been conducted on institutional performance and environment, some of its thematic and conceptual components have been reviewed and adjusted. Therefore as of 2009 a greater comparability was sought between the EDI and the EDID, and the conceptual categories were homologated in the two studies.

In 2010 the review and adjustment of the methodology and data collection instruments continued, ensuring the ability to maintain comparability with previous exercises and to obtain greater clarity with respect to concepts and variables of the survey. As of that year, it was sought to give greater importance to the study variables generated by the survey as relevant input to the institutional analysis; therefore the range of the information published was extended, and the entirety of the results obtained is available for the citizenry: disaggregated for total governorships/ Capital District levels and by entity, with breakdowns by sex, length of service and hierarchical level.

[2] Transparency International chapter in Colombia.

Between 2011 and 2012 the review and adjustment of the methodology and data collection instruments continued, intending to preserve comparability with previous exercises and incorporating recent developments related to public administration; especially on the issues of accountability and service to citizenry, in compliance with the guidelines of the CONPES documents[3] 3654 and 3649 of 2010.

In recent years, DANE has taken part in the design of the National Strategy of the Comprehensive Anti-Corruption Public Policy (CONPES 167 of 2013) and the Law of Transparency and Access to Public Information (Law 1712 of 2014). Therefore the variables related to the topic of prevention of irregular practices were reviewed and some questions on the subject were incorporated, from considerations posed by the Transparency Secretariat of the Presidency of the Republic and the Attorney General's Office.

For the measurement conducted in 2014, from the approval of the National Policy of Administrative Efficiency in Serving the Citizenry (CONPES 3785, 2013), some variables related to service to citizenry were included in the survey from the perspective of the public officials, as a supplementary exercise to the measurements conducted by DNP in this regard.

In the 2015 measurement, with the participation of the Administrative Department of Public Administration (DAFP, for its acronym in Spanish) some of the issues under study were reviewed and variables aimed at strengthening the topics related to work environment were included, especially related to: the system of incentives, social welfare programs, work harassment, education, training, career development and risk policies in the entity. Furthermore, some of the variables on accountability were adjusted according to the publication of the Single Accountability Manual published in 2014 by the Committee of Technical Support on Accountability Policy.

[3] The National Council of Economic and Social Policy (CONPES) is the highest national planning authority (...) publishes public policy documents on general development policies (The Development Dimension Aid for Trade and Development results, OECD Publishing, 2013).

2. DESIGN OF THE STATISTICAL OPERATION

2.1. THEMATIC DESIGN

2.1.1. Information needs

The EDI is a response to the need for statistical information pertaining to national public organizations, from the perspective of the public officials who work in them. To this end it is sought to achieve a crosscutting view to the official entities, whereby it is possible to perform a monitoring with respect to various matters related to the Colombian public administration.

Initially the survey had an approach mainly focused on the subject of corruption, throughout the years however, many changes have occurred in the Colombian public administration. Similarly, various policies and strategies have initiated that affect the development of the state organizations.

For this reason, in recent years the need has arose to incorporate topics into the study that respond to the dynamics of the public sector, among which it is worth mentioning: work environment, accountability, service to citizenry, results-based management, transparency and prevention of irregular practices.

2.1.2 Objectives

a. General objective

- To know the perception of public officials with respect to the institutional environment and the performance of national entities where they provide their services.

b. Specific objectives

- To obtain information on the perception of the public officials with respect to the institutional environment of entities, from the knowledge about the existing level of credibility in the rules, and the policies as well as with respect to the adequacy of resources.

- To collect information on the perception of the public officials regarding the institutional performance of the entities, from the knowledge about the achievements reached in results-based management, accountability and prevention of irregular practices.

- To generate indicators of development of the national public administration, which enable classifying the bureaucratic organizations in a given time and compare their evolution over time

2.1.3 Scope

The following notes are made on the scope of the study:

- Public officials belonging to the central level of the entities under the executive, legislative and judicial branches; control bodies; autonomous bodies; autonomous university organizations and electoral authorities; autonomous regional corporations, and institutions of the Colombian scientific and environmental research are not included. In this sense, the sample selected does not include public officials working outside the headquarters of the entities or officials who have other work engagements, as it is the case of contracts for the provision of services. It does not include officials elected for office either.

- It is aimed at obtaining information regarding the perceptions or beliefs of the public officials with respect to actions or behaviors expected within the territorial entity and social relations in the domain of the public sector. So that perceptions obtained from it are closer to the social phenomenon, unlike general studies that combine multiple topics.

- It enquires about the perception of the officials as to matters related to the Institutional environment and performance.

- It does not measure the phenomenon of corruption, as it inquires as to the fulfillment of organizational conditions that may indirectly obstruct the development of irregular practices within the public entities and contribute to the development of a culture of lawfulness.

- It studies whether the territorial entities have organizational conditions that are favorable to institutional development at the territorial level. The EDI does not perform a thorough diagnosis of the territorial entities; it is a complementary

input of information for decision-making oriented toward the development of internal reforms and relating to the public sector. In this sense, there are other methodological developments such as fiscal performance indices or the departmental and municipal transparency indices, which provide other approaches with respect to the territorial public administration.

- The ESAG has a national coverage and obtains data of a sample of 267 legally established slaughtering facilities for cattle and small cattle spread all over the country on a monthly basis.

2.1.4 Reference framework

a. Theoretical framework

In recent decades public administration in Colombia has had major changes related to the role played by the state in society. These changes are associated with the loss of credibility in the state as the manager of the welfare of its citizens. New challenges in the role of the state bring new requirements and obligations for public institutions to act in accordance with the principles of economy, efficiency, effectiveness and where the citizen is the focus of the public service.

Thus, as of the eighties a number of reforms were posed focused on promoting desirable values in public administration such as effectiveness, efficiency, quality, competitiveness, self-control, accountability, transparency, customer service, citizen satisfaction, and professionalization.

These requirements lead to the rethinking of the concept of public service, in an environment that seeks to adopt elements of the private sector in order to meet the needs of citizens. This new way of seeing the public service is specified under the New Public Management, which is used by Hood defining it as the union of professional management and neo-institutionalism[4], with the assumption that if the public sector

[4] The neo-institutional theory focuses its analysis on the study of institutions as a way to understand and explain the interactions between individuals. Institutions are understood as a set of standards, values, rules, routines and processes carried out in a given environment and that influence the behavior of the actors involved.

directs its management to emulate practices in the market, this will result in a greater benefit for governments in terms of legitimacy and governability[5].

Professional management is defined from the ideas of neo-taylorism[6] and it focuses on the study of public institutions from their administration, under the assumption that poor management can be explained as due to misadministration. In this regard, it calls for the revision of the hierarchical structures and the availability of monitoring and control mechanisms that enable the measurement of the objectives and the enforceability of responsibilities.

With respect to the neo-institutionalism, Hood recognizes the importance of the contributions made by three theories: the public choice theory, the transaction costs theory and the agency theory. Each provides elements such as the introduction of economic study in public decision-making, the recognition of costs between public and private action, the existence of asymmetric information and the need for control tools at the level of information and responsibilities as well as the implementation of accountability processes.

In order to summarize the above, the purpose of the New Public Management is to encourage the state administration to be efficient and effective, by using competence mechanisms that promote a better quality in the services provided, so as to meet the needs of citizens. In a crosscutting manner to this purpose, the promotion of transparency, by using control mechanisms that facilitate the access to information, both to the government and the citizens, is a key element to reduce asymmetries of information, make better decisions and encourage citizen participation.

In this context, the need arose to have more information with respect to public organizations, their functioning, organization, processes, activities, and especially with respect to those who make up the public administration, as a means to better know the behavior of organizations in the public administration.

[5] Hood, Christopher. (1991): «A Public Management for All Seasons? », Public Administration, vol. 69, spring, p. 5-6.

[6] Production model based on principles of mass production and use of automation technologies of production processes, aimed at reducing failures in products or services.

This need is reflected in the interest for knowing aspects associated with the *organizational climate* of an entity, which is defined by Brunet[7] as "*the perceptions determined by the values, attitudes or personal opinions of employees, and the resulting variables such as the satisfaction and productivity that are influenced by the environmental variables and personal variables*".

Under this perspective, the vision of public officials on the behavior of public institutions in which they work, gains particular importance, as according to the above, it is possible to know the entire organization through the individuals. In this sense, the public officials build their individual opinion through their personal experience, of what they experience in their daily life, the characteristics of the organization and their own personal characteristics; opinions that in an aggregate manner become a key element to understanding the internal situation of an organization.

In this respect the production of information from public officials as base unit of public organizations, is the core element of the study, aimed at building information from the public level to the public level. Thus, enquiring about the functioning of public organizations from within, information on their situation is generated.

The availability of this information is an important input for the monitoring, diagnosis and decision-making with respect to public administration. Comparability between organizations and the transformations that it experiences over time, provide a useful control tool for the public sector and aspects associated with its environment and how it determines its management with a view to a more efficient, effective and open state in meeting citizen demands.

[7] Brunet, Luc. (2011) El clima de trabajo en las organizaciones (Work climate in organizations). Trillas, p. 16-19

b. Conceptual framework

The information obtained in each entity serves as the basis to verify the following hypothesis: the performance of a public organization depends on the institutional environment in which its officials operate (World Bank, 2000: 3).

In this sense, as an institutional environment is configured to be inclined toward a respect for the rules, the institution's performance increases. Therefore, if the environment leads to a behavior where interference in the processes occurs in the organization, the possibilities for a better performance of the entity are diminished; to the extent that particular interests are sought. Conversely, if the respect for the rules prevails in the organization, it increases the possibility that its services are focused on satisfying the general interest and the officials themselves. The following equation describes the functional relationship between *institutional environment* and *performance*.

$$Di = f(Ai),\ i = (1, 2, \ldots, n)$$

Where,

D = Institutional performance in the public entity (i); A = Institutional environment the public entity (i); n = public entities.

At the level of statistical analysis, it is expected to demonstrate that the environment in public entities affects their institutional performance. The hypothesis will be verified at the level of entities, institutional sectors and functional groups according to the structure of the state in Colombia. This will enable displaying the capacity of public institutions following the change in the public management model that stemmed from the promulgation of the National Political Constitution of 1991.

With information from the EDI, data are obtained with respect to the work environment, the level of acceptance of officials regarding orders or commands, which are posed in terms of a set of resources (institutional, physical, human and financial), which are generated externally and / or internally. If officials believe such

set of resources to be favorable[8], it is considered that there is a better institutional environment. This is translated into the fact that the entity has positive incentives to adopt a behavior that tends to show higher levels of governance.

A public entity shows a greater governability[9] when it acquires habits related to its capacity to adopt its activity to the results-based management model, in order to be transparent to citizenry (accountability[10]), and to encourage and recognize public officials through the welfare that it provides to them (Labor Welfare). (World Bank, 2000: 10).

In short, if officials believe that the set of resources is reliable, it will be reflected in an improved performance in the exercise of public functions that have been assigned to them under the Constitution and laws.

Thematic content

Considering that the cornerstones of the survey fall on the concepts of institutional environment and performance, it is worth mentioning that they were adapted for the collection instrument to be friendly with the target population (in this case public officials).

For this purpose, the following scheme is the starting point, sorted from highest to lowest hierarchy level, in order to organize the different concepts that we address:

a. Concept
b. Dimensions
c. Components
d. Subcomponents

[8] The set of resources is reliable if: a) the rules are considered impartial, b) policies considered relevant and fair c) resources are sufficient and relevant.

[9] This term is associated with public entities in the sense that their management is reflected in the satisfaction of the citizens and internally in the motivation of its officials. This is recognized as the impact or scope of its management model.

[10] Within this framework, corruption is seen as a consequence of low accountability. In that sense, if the irregular practices in management and contracting of the entity are perceived as an issue, and officials do not report them for various reasons.

Firstly, the components of the two main concepts of the survey, institutional environment and institutional performance are schematically presented, and subsequently the way in which these concepts are inter-related.

- **Institutional environment**

The survey considers the **institutional environment** as the willingness of the institution to follow rules, implement policies and manage resources (World Bank, 2000: 3).

It establishes the degree of acceptance and credibility with respect to these fundamental factors; if acceptance is high there is a favorable environment for their realization and implementation.

The components of this concept are:

- *Credibility that officials have in the rules:* It refers to the perception that they have with respect to the work environment where formal rules of public management are implemented and developed in the entity (World Bank, 2000: 18).

  It explores matters related to relationships between officials, the respect for the decisions, the attitude of managers, the official - entity relationship, the motivations for staying in the entity, workload and contracting.

- *Credibility that officials have in the policies:* It refers to the perception that they have with respect to the relevance and impartiality in the implementation of policies and guidelines in the entity, both internal and external (World Bank, 2000: 19).

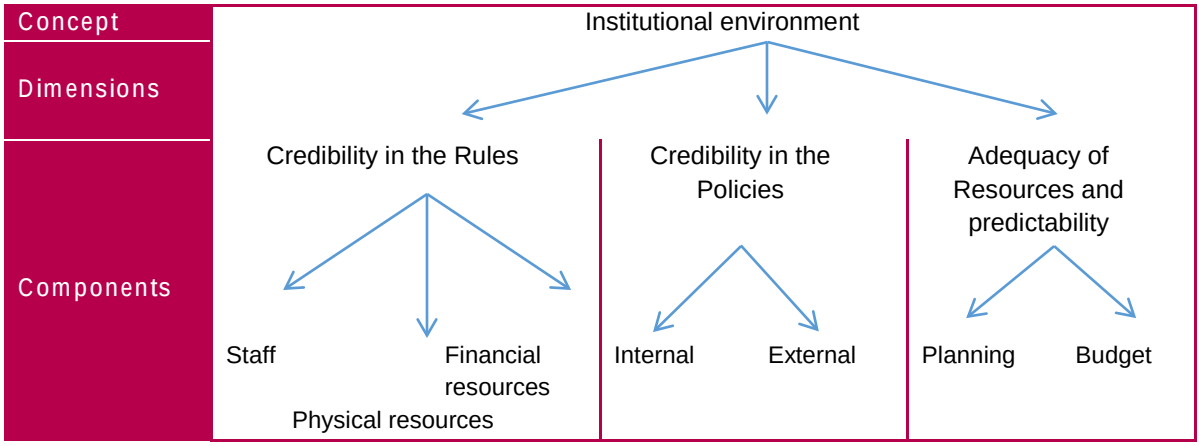
  It studies the implementation of internal guidelines (resolutions, memoranda, circulars, etc.), external guidelines and policies.

- *Adequacy of resources and predictability:* It refers to the perception of public officials with respect to the planning of human, physical and budgetary resources of the entity (World Bank, 2000: 19).

It explores the institutional plans, as well as some aspects related to the budgetary programming and execution.

The scheme corresponding to the institutional environment concept is shown below.

Figure 1. Institutional environment concept



Source: DANE.

- **Institutional performance**

It is the ability of the entity to adopt a results-based public management model, to report on its performance (accountability) and to motivate its employees (labor welfare) (World Bank, 2000: 9).

The components analyzed under the institutional performance concept are presented as elements that are crosscutting with respect to the analytical dimensions posed in the institutional environment concept.

The components of this concept are:

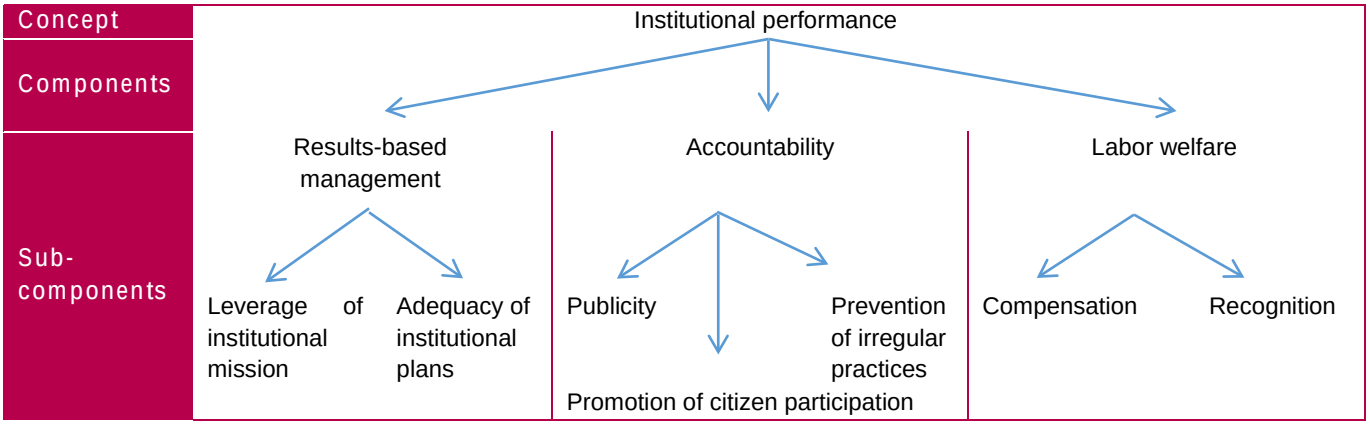
- *Results-based Management: It refers to the perception about the implementation of management tools for the fulfillment of the objectives and strategies of the entity (World Bank, 2000: 9).*

- *Accountability: Perception of the officials with respect to the quality of information that is delivered to citizens. Additionally it is enquired about the perception of public officials with respect to the actions to prevent irregular practices in their entities, their impact on the organization and the strategies implemented by the entity so as not allow them to develop (World Bank, 2000: 9).*

- *Labor welfare: Perception related to the level of satisfaction of the official with respect to the compensation and the recognition of its work done (World Bank, 2000: 10).*

The figure corresponding to the institutional performance concept is shown below.

Figure 2. Institutional performance concept



Source: DANE.

Correspondence of concepts

In order to make the survey more understandable to the international operators such as the World Bank or to the scientific communities, it was deemed necessary to redefine these concepts in terms of governance and governability. The Interdisciplinary Center for Development Studies (CIDER) has come up with the following standardization of the concepts with respect to governance, governability and good governance.

- Governance: They are the rules of the game within a social system.
- Governability: It refers to the capacities of social actors.
- Good Governance: The proper exercise of those capacities for the common good. (Torres, 2007)[11:]

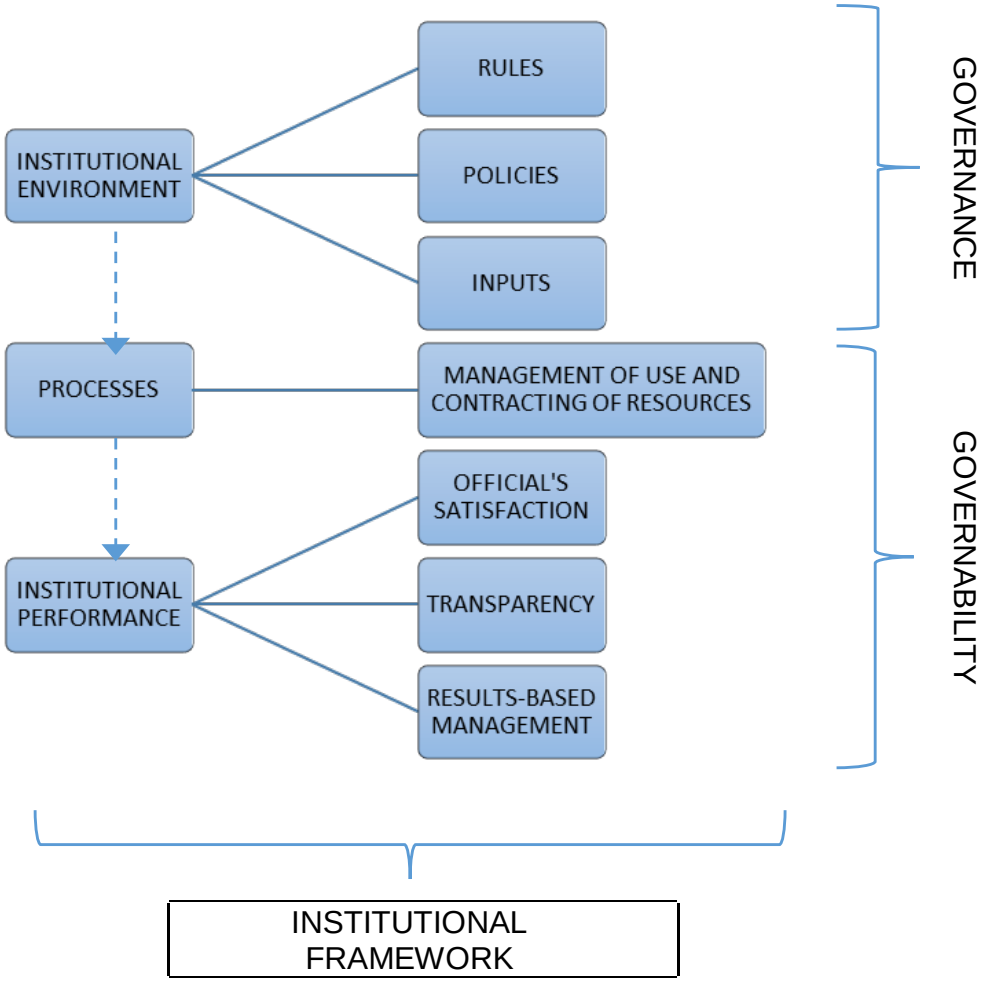
From the above, an adaptation of the institutional environment and performance was made: the *institutional environment* concept that was adopted is close to *governance;* whereas the *institutional performance* concept is similar to that of *governability*.

In this sense *governance* is understood as the level of institutionalization with respect to the rules and habits in various fields within public organizations; whereas *governability* is understood as the degree of implementation of the social capacities acquired by public organizations.

The graph below displays the conceptual map defined for the EDI.

[11] See Torres-Melo, J. 2007 "Gobernanza, gobernabilidad y buen gobierno: Aproximación conceptual" (*Governance, governability and good governance: a conceptual approach*), Carlos Zorro (Comp.). El desarrollo: perspectivas y dimensiones (*The development: perspectives and dimensions*). CIDER. Universidad de los Andes

Figure 3. Conceptual map



Source: DANE.

Through the continuous measurement of these aspects it is intended to have inputs for monitoring the *institutional development* of public entities, understood as a permanent and cumulative process of change and transformation of institutions, in this case of a public nature.

The above enables identifying critical and satisfactory organizational aspects of each entity, which indicate paths to follow to address deficiencies in both their environment and in their organizational performance.

c. Legal framework

The National Strategy of the Comprehensive Anti-Corruption Public Policy (CONPES 167 of 2013), which corresponds to the national component of the Comprehensive Anti-Corruption Public Policy (PPIA for its acronym in Spanish) has as its main objective to strengthen the tools and mechanisms for the prevention, investigation and punishment of corruption in Colombia.

Law of Transparency and Access to Public Information (Law 1712 of 2014), whereby the right of access to public information, the procedures for exercising such right and the exceptions to the publicity of information are regulated.

Law 909 of 2004, whose purpose is the "regulation of public employment system and the establishment of the basic principles that should govern the exercise of public management."

Law 1010 of 2006 whereby actions are adopted to prevent, correct and punish work harassment and other harassment in the context of labor relations. This law aims to "define, prevent, correct and punish the various forms of assault, mistreatment, harassment, thoughtless and offensive treatment and generally any offense to human dignity that are carried on toward those conducting their economic activities in the context of a private or public labor relationship".

d. International benchmarks

The survey takes as benchmarks the studies and research conducted by the World Bank with respect to the measurement of aspects related to governability and governance.

Specifically, the EDI adapts within its theoretical framework the recommendations of the World Bank in the document entitled "Public Officials and Their institutional environment: An analytical model for Assessing the impact of institutional change on Public Sector performance"12, which presents an analytical framework for the

[12] Manning Nick, Mukherjee Ranjana, Gokcekus Omer, "Public officials and their institutional environment. An analytical model for assessing the impact of institutional change on public sector performance", The World Bank. Poverty Reduction and Economic Management Network. August 2008

design of a series of surveys from the public level (official's view) with respect to the institutional environment and analyzes information generated in fifteen countries. This document describes how the survey results provide a general map of the public sector as well as its strengths, weaknesses and how they can offer an approach to the identification of potential benefits of reforms.

Thus, the fundamental premise of the EDI is built where the action of the public domain and therefore the performance of the organization shall depend on the institutional environment surrounding its public officials. With this, it is intended to prevent anti-government positions, through an understanding that the poor work performance can be due to poor performance or because the environment where officials work is not adequate.

The core indicators presented by the document are developed in terms of credibility that officials have in the rules, the policies, adequate and sufficient resources to define the institutional environment. Now, in order to measure the performance, it presents results-based management, accountability and satisfaction or labor welfare. In this sense, the EDI seeks to develop these same indicators, and for this purpose it establishes sections addressed to the core matters developed in the World Bank document and it also includes territorial matters, as is the case of decentralization.

The need for information on public sector workers has motivated other countries to also implement measuring instruments addressed to those who are a part of their organizations. In this regard, it is worth mentioning the following statistical studies:

The "Federal Employee Viewpoint Survey FEVS", conducted annually by the US Office of Personnel Management, for the purpose of indicating the conditions that characterize successful public organizations.

The “Civil Service People Survey CSPS", conducted since 2009 by the Civil Service of the United Kingdom, seeks to measure the level of commitment of its staff and the factors that affect it.

The "Public Service Employee Survey (PSES)", conducted with the support of Statistics Canada, measures aspects of the work commitment, leadership, workforce and work environment of Canadian public officials.

The "Australian Public Service Employee Census (APS employee census)" is a study conducted by the Australian Public Service Commission whereby they obtain information on many aspects related to the experiences of public employees, such as: the attitude of public employees, work conditions, leadership, job satisfaction, staff recruitment and retention.

e. National benchmarks

For the design of the EDI the experience of Transparency International chapter in Colombia was considered, which is an organization that has conducted measurements that seek to approach directly and objectively the actions of the territorial public entities.

In this regard, Transparency Corporation chapter in Colombia has published the Corruption Perceptions Index (CPI) since 1995, "which seeks to specifically measure the degree of corruption present in the territorial public entities and among politicians, defining corruption as the abuse of power to favor private benefit." Similarly, this organization has developed indices for measuring the level of transparency and corruption risks in entities at the national level, in the departments and municipalities13.

Analyzing the importance of involving the subject of corruption for an Institutional environment and performance survey, sections have been included in the EDI that respond to the premise that a good environment in the entity improves its performance and reduces irregular practices.

Another national benchmark for enquiry with respect to the design of the study is the Integrity Index of the Attorney General's Office, which is a tool designed for the purpose of "establishing the likelihood of regulatory compliance of administrative

[13] Transparency for Colombia Corporation currently has three indices a) the national transparency index: focused on public entities at the national central level, three branches of government and supervisory bodies; b) the Departmental Transparency Index: It includes 32 governorships and 32 departmental comptroller's offices; and c) Municipal Transparency Index: It includes all the departmental capitals, except San Andres, Bogota, Cali and Medellin, as well as a sample of municipalities of all the regions of the country and categories defined by Law 617 of 2000.

functions on behalf of the public entities and generating data addressed to know and interpret the risks of non-compliance".[14]

With the implementation of the Integrated Model of Planning and Management, the Single Reporting Form of Management Advance (FURAG for its acronym in Spanish) was created as an online tool for monitoring, evaluation and control of the results of public entities, which enables having on-going information on the progress of the implementation of the policies developed under the model.

2.1.5. Design of indicators

The survey indicators summarize two types of information: the information found by variables and the information obtained by sets of variables. The former indicators are known as simple indicators and the latter, as compound indicators.

Simple indicators

It corresponds to the results of all the variables of the survey, which are published in full. The EDI variables are of a categorical nature and each study variable usually has four possible categories. Therefore, for the presentation of results per variable we use the percentage relative frequencies distribution.

Another simple indicator available for the EDI corresponds to the arithmetical average, which is built through the transformation of categorical variables into discrete variables. The transformation is performed from a score that is thematically assigned to each category. The idea of this score is to characterize each category in four possible numeric values: 1 when the variable is rated as totally unfavorable; 2 when it is unfavorable; 4 when it is favorable; and 5 if it is entirely favorable. All these values measure the favorability of the responses of officials with respect to the entities where they work.

[14] Attorney General's Office. INTEGRA Strengthening Tool for Prevention Management. http://www.procuraduria.gov.co/portal/media/file/Informe Integra Completo.pdf

Compound indicators

They intend to summarize the information contained in a set of variables that have a thematic concept in common. In order to build them it is necessary to homogenize the scale of the categories of each variable; i.e. all variables should have the same categories.

The variables that are part of the indicator have four categories that can be associated with four possible levels of favorability of the public official toward his/her entity: Level 1 (totally unfavorable); Level 2 (unfavorable); Level 3 (favorable) level 4 (totally favorable). With these four possible categories the percentage relative frequency distribution is constructed by joining all the variables into one.

These categories are converted into numeric values that quantify the level of favorability: 1 for totally unfavorable; 2 for unfavorable; 4 for favorable and 5 for totally favorable. With this transformation it is possible to build the average of averages of the variables as another compound indicator.

Types of variables

The study variables are categorical and generally have 3 categories. Conceptually there are no intermediate categories, to have the respondent take a positive or negative position on the questions that are made to him/her. The following are possible response options:

1. Totally agree, agree, disagree, and totally disagree.
2. A lot, some, little, nothing.
3. Very effective, somewhat effective, little effective, not effective at all.
4. Frequently, sometimes, barely, never.

These categories can have an associated a level of favorability that reflects the official's favorable or unfavorable perception with respect to some situations that occur in the entity to which he/she belongs. This association is done both in the numerical and categorical manner, as shown in the following table:

Table 1. Numerical association per response option

Categorical association	Totally favorable	Favorable	Unfavorable	Totally unfavorable
Numerical association	5	4	2	1

Source: DANE.

The numerical association gives the ability to quantify with a score of one to five the categorical measurements of each variable, with which the average of the favorability can be built per variable or set of variables. With the categorical association it is possible to observe the distribution of favorability for a set of variables or one by one.

Calculation of simple indicators

Simple indicators are defined for each of the individual variables that make up the survey. Absolute and relative frequency of each category and the average with numerical association presented in the previous section is estimated. An overview of the simple indicators and the respective manner of estimating them is presented below.

For the *U* population group of *N* elements, *y* being a categorical variable with categories $c_1, c_2, \ldots, c_i, \ldots c_I$. The indicator of absolute frequency of the c_i category measures the number of elements that are classified in this category. The indicator is calculated as:

$$t_{c_i} = \sum_u z_{c_i k}$$

With $z_{c_i k} = 1$ if the element k is classified in the c_i category and $z_{c_i k} = 0$ if it is classified in another category. It is observed that the absolute frequency indicator is the total of the z_{c_i} variable; therefore this total is estimated with the general expression $\hat{t}_{z_d \pi_H}$.

On the other hand, the relative frequency indicator of the c_i category measures the percentage of elements that are classified in this category. The indicator is calculated for the U population group of N elements as:

$$R_{c_i} = \frac{t_{c_i}}{N} = \frac{\sum_U z_{c_i k}}{\sum_U 1}$$

It is observed that the relative frequency indicator is the ratio of two totals. The numerator the absolute frequency indicator of the c_i category and the denominator is the total of adding a variable of constant values of ones. Hence, this ratio is estimated by means of the general expression $\hat{R}_{dH}$.

The indicator of averages for the categorical variable y, previously defined, uses the transformation of the I categories into numerical values. The transformation generates a new variable y' upon which the population average is calculated. The formula for this indicator is:

$$P = \frac{t'_y}{N} = \frac{\sum_U y'_k}{\sum_U 1}$$

Like the relative frequencies indicator, the indicator of the average is a ratio between two totals; therefore it is estimated by means of the general expression

$\hat{R}_{dH}$.

Calculation of compound Indicators

Compound indicators are defined for sets of variables. In the survey the publication is considered to be of two main compound indicators, the indicator of institutional environment and the indicator of institutional performance. The general formula whereby the calculation of these indicators is made is presented in the following and the components of each of them are subsequently detailed.

For the calculation of the indicators, initially the relative frequencies of favorability levels and averages are estimated through the numerical ratio of the levels. An overview of the compound indicators and their respective estimation expressions are presented below.

For the *U* population group of *N* elements, with *J* categorical variables, all with the same *I* categories $c_1, c_2, \ldots, c_i, \ldots c_I$. The absolute frequency indicator of the c_i category of the set of *N* elements and J variables is defined as:

$$T_{c_i} = \sum_{j=1}^{J} \sum_{U} z_{c_i kj}$$

With $z_{c_i kj} = 1$ if the element *k* is classified in the c_i category of the *j* variable and $z_{c_i kj} = 0$ if it is classified in another category for any *j* variable. The indicator also can be expressed as the summation of a new variable $Z_{c_i} = \sum_{j=1}^{J} z_{c_i kj}$ where the record $z_{c_i kj}$ symbolizes the total times that a person *k* in the *J* variables selects the same category *i*. It can be expressed as follows:

$$T_{c_i} = \sum_{j=1}^{J} \sum_{U} z_{c_i kj} = \sum_{U} \sum_{j=1}^{J} z_{c_i kj} = \sum_{U} Z_{c_i k}$$

Therefore the absolute frequency compound indicator is the total of the Z_{c_i} variable and is estimated by means of the general expression $\hat{t}_{z_i \pi_H}$. The $\pi - estimator$ for the H sample stratum of the Z_{c_i} variable.

On the other hand, the relative frequency indicator of the c_i category measures the percentage of values that are classified in this category for the set of the *J* variables. The indicator is calculated as:

$$R_{c_i} = \frac{T_{c_i}}{NJ} = \frac{\sum_U z_{c_i k}}{\sum_U J}$$

Which it is a ratio of totals of two variables: the absolute frequency on the numerator and the total of a variable of constant value *J* on the denominator. Hence, this ratio is estimated by means of the general expression $\hat{R}_{c_i}$.

As an example, we will assume that the AB compound indicator consists of 13 categorical variables and let us assume that 100 persons responded the survey. The first step is to calculate the absolute frequencies of each category of the thirteen variables. Each variable has the same categories that are associated with a favorability score (1, 2, 4 and 5).

We continue with the calculation for each of the categories. We assume that we start with the completely unfavorable category, which has a numerical score = 1 in the thirteen variables, for this effect we calculate the number of times that this category is answered by the 100 persons in the thirteen variables, which will be T_{c_1}.

This value is divided by the number of persons (100) multiplied by the number of variables of the Indicator (13) = 1300. This procedure is performed for each of the categories $(T_{c1}, T_{c2}, T_{c4}, T_{c5})$.

The indicator of averages for the set of y_j categorical variables uses the transformation of the *I* categories into numerical values for the *J* variables. The transformation generates a set of new variables y'_j upon which the population average is calculated and then the averages are then averaged. The formula for this indicator is:

$$P = \frac{1}{J}\sum_{j=1}^{J}\frac{t_{y'_j}}{N}$$

The average of averages can be re-expressed as:

$$P = \frac{1}{J}\sum_{j=1}^{J}\frac{t_{y'_j}}{N} = \frac{\sum_{j=1}^{J} t_{y'_j}}{NJ} = \frac{\sum_{U}\sum_{j=1}^{J} y'_{kj}}{NJ} = \frac{\sum_{U} Y'_k}{NJ} = \frac{\sum_{U} Y'_k}{\sum_{U} J}$$

Which it is a ratio between the totals of the new variable $Y' = \sum_{j=1}^{J} y'_j$ and the variable of constant value *J*. The manner to estimate this indicator is done through the general expression $\hat{R}_{dH}$.

The "composition of indicators" section below describes the compound indicators published in the survey.

Composition of indicators

The compound indicators proposed in the framework of the study correspond to the thematic components described in the reference framework of this document, which are presented below:

Institutional environment indicator

The purpose of this indicator is to measure the perception of the officials with respect to the rules, policies and resources available in the entity. The quality of the institutional resources (physical, human and financial) made available to the entity, is characterized through this indicator.

The components of this concept are:

- Credibility in the rules
- Credibility in the policies
- Adequacy of resources and predictability

Appendix F presents the list of variables used for the calculation of the indicator between 2010 and 2014.

Institutional performance indicator

The purpose of this indicator is to measure the perception of the officials with respect to the capacity of the entity to undertake processes related to results-based management, accountability, promotion of labor welfare and the prevention of irregular practices.

The components of this concept are:

- Results-based management
- Accountability
- Labor welfare
- Prevention of irregular practices

Appendix G presents the list of variables for the calculation of the indicator between 2010 and 2014.

2.1.6. Plan of results

a. Design of output tables or results tables

The output tables are an essential part for the publication of the survey results. They are produced with the database fully validated and debugged.

For the EDI, tables are produced for each of the modules of the survey and cover all the questions of the form.

The disaggregated information is published in files annexed to the publication and are made available to the public on the DANE website[15]: It includes totals, percentages, and the estimated coefficients of variation, confidence intervals and averages per variable.

Bulletins

For the dissemination process, a descriptive bulletin is prepared with the main findings of the survey. The bulletin includes the comparison with results obtained in previous years for the variables under study.

Additionally a press release is published that summarizes the main findings of the research.

Anonymized microdata

Databases with the information pertaining to the survey are subject to an anonymization process that ensures the statistical reserve of sources.

Subsequent to the publication, this information is delivered to the Dissemination, Marketing and Statistical Culture Division of DANE to become publicly available through the entity's Data Bank. Access to such information is made in accordance with the provisions set forth in Resolution 1503 of 2011 of DANE.

[15] The URL where information is available is as follows: http://www.dane.gov.co/index.php/educacion-cultura-gobierno-alias/encuesta-sobre-ambiente-y-desempeno-institucional-departamental-edid

Since 2013 the anonymous microdata and their documentation are available to the public in the National Data Catalogue[16]. Information is available in two levels of disaggregation.

- *The base of anonymised microdata by region:* It is published with license to download microdata online.
- *The base of anonymised microdata by entity:* It is published as *"data files with access license"*. Under this scheme, whoever wishes to enquire about anonymised microdata with this level of disaggregation should complete an application form, in order to verify the use of information and being allowed access and download files.

2.1.6.1. Design of output tables or results tables

In processing the output tables of the survey, the following thematic and geographical breakdowns are used:

- *By national total:* It includes consolidated information with respect to the entities at the national level under study.
- *By sex:* For the national total, the information is broken down by males and females
- *By length of service in the entity:* For the national total, the information is broken down into four ranks 1) from 6 months to 6 years, 2) from 7 to 11 years, 3) from 12 to 16 years, and 4) more than 16 years.
- *By hierarchical level:* For the national total, the information is broken down into three hierarchical levels 1) Manager / Consultant, 2) Professional / Technical, 3) Administration.
- *By entity:* Information disaggregated for each of the entities at the national level under study.

[16] The URL where information is available is as follows: http://formularios.dane.gov.co/Anda_4_1/index.php/home

2.1.7. Design of the questionnaire

The structure of the form is presented in Table 2:

Table 2. EDI Structure of the questionnaire

Module	Dimensions	Description
	Work location	It contains all the information related to the work location of the respondent.
CREDIBILITY IN THE RULES	C. Labor environment	It enquires about the perceptions as to the degree of satisfaction with respect to the recognition of the work in the entity, the work incentives that it offers and the labor environment in which they carry out their activities.
	D. Management of physical resources	It enquires about the perception of public officials as to the management of physical resources.
	E. Evaluation and Control	It enquires about the perception of public officials in regards to the monitoring in the management of physical resources and the labor environment.
CREDIBILITY IN THE POLICIES	F. Internal guidelines to the entity	It enquires about the perception of officials with respect to the rules and guidelines governing the performance of an entity on matters of internal nature.
	G. External policies	It enquires about the perceptions on the guidelines that come from entities of higher hierarchy.
	H. Evaluation and Control	It enquires about the perception of public officials in regards to the monitoring of policies and guidelines.
ADEQUACY OF RESOURCES AND PREDICTABILITY	I. Planning	It enquires about the perception of public officials with respect to the predictability that each entity has regarding the resources required in order to achieve their objectives.
	J. Budget	It enquires about the perception of public officials with respect to the budget process of the entity.
PLANNING OF THE DEVELOPMENT AND CITIZEN PARTICIPATION	K. Planning of the development	The following statements seek to know the perception of the territorial public officials in regards to the quality of the design and scope of the Territorial Development Plan.
	L. Citizen participation	The following statements seek to know the perception of the territorial public officials with respect to citizen participation in plans and programs that their entities develop and the importance thereof for the division.

Source: DANE.

The development of the information system for the capture of information from the EDI is performed by means of an electronic form located on the DANE website. Similarly, the possibility is provided for completing the hard copy questionnaire in contingency situations related to the impossibility for electronic completion thereof.

The electronic questionnaire located on the DANE website; for this effect, the design specifications and construction of electronic questionnaires provided by the entity's IT Division are taken into consideration.

In order to facilitate the operation, the management and maintenance of the information system, the respective user manuals and systems are developed. The components of the computer tool proposed are intended to facilitate the capture, update (add, modify and delete records in the database), enquiry and production of coverage reports and management of the information contained in the database manager system and the applications administrator system.

For modifications or adjustments to the questionnaire, queries are periodically made to the entities belonging to the working committees of the study. In this scenario the proposals for inclusion, modification or elimination of questions and variables of the EDI are assessed. In the case of new questions, before their incorporation, desktop tests are performed in order to verify aspects associated with the understanding and consistency of the questions.

The changes are subsequently recorded in the Record of Changes in the Design form DSO-PLD-01-r3 (Appendix A).

2.1.8. Validation, consistency and imputation standards, specifications or rules

In order to ensure that the information collected is reliable, and that it is allowed to be captured properly, in a parallel manner to the design of the questionnaire, validation and consistency standards are established. These standards determine coherent flows throughout the survey as well as *the compliance with certain numerical syntax rules or that the possible values*[17] are valid for each of the questions.

[17] Corresponding to the data validation concept, harmonized by DANE.
http://www.dane.gov.co/index.php/es/normas-y-estandares/sistemas-de-consulta

With these validation standards, the IT team performs the development of the survey's capture application, incorporating the necessary commands to the electronic questionnaire in order to automatically unfold and run the flows that arise through the survey.

In order to check the operation of the validation and consistency standards, a series of tests are made to the application that intend to find errors in the programming, which once they are identified, they are subject to correction so as to ensure that the application used for data collection is robust and minimizes the risk of errors in the completion of information.

2.1.9. Nomenclatures and classifications used

The standard numerical coding of institutional sectors is performed according to the classification established by the Administrative Department of Public Administration in the document "*Structure of the Colombian State Manual Version 12*"[18].

For the classification of the hierarchical levels, the nomenclature and classification and the employee handbook relating to the positions in the entities of the national levels, established by means of Decree 770 of 2005 are adapted.

The numerical codification of the entities at the national level used in the anonymized database corresponds to the Single Institutional Code (CUIN for its acronym in Spanish), which is a coding established by the General Accounting Office by means of Resolution 767 of 2013.

[18] For reference purposes

2.2. STATISTICAL DESIGN

2.2.1. Basic components of the statistical design

Universe

Public officials belonging to the central level of the entities under the executive, legislative and judicial branches; control bodies; autonomous bodies; autonomous university organizations and electoral organization; autonomous regional corporations, and Colombian institutions of scientific and environmental research

Target population

Public officials with a length of service greater than six months in the entity, and who work in the headquarters of the entities at the central level under the executive, legislative and judicial branches, control bodies and electoral organization. In addition, the officials who work in the headquarters of the regional autonomous corporations, public universities, scientific and environmental research institutions located at the regional level.

A total of 172 entities took part in the EDI 2015.

Statistical framework

DANE annually updates the sample framework of the survey, asking by means of magnetic media, each of the participating entities for the list of public officials who work in their headquarters.

The variables included in the update of the sample framework are described below:

- *Entity:* Full name of the entity, followed by the acronym
- *Division or area:* Name of the division, area or office where the official works
- *ID:* Official's identification number
- *Name:* Official's full name
- *First surname:* As it is shown on the identity card

- *Second surname:* As it is shown on the identity card
- *Position:* Official's position
- *Position level:* For the institutional performance survey, three levels have been identified:
    - Level 1. Manager / Consultant:
    - Level 2. Professional / Technical
    - Level 3. Administrative
- *Fecha_ING:* Official's starting date in the entity's payroll.
- *MUNIC_TRAB:* Municipality where the official performs his/her work most of the time.
- *Branch:* Address where the official works most of the time.
- *Sex:* Official's sex 1. Male 2. Female.
- *E-mail:* Official's institutional email, if any (this field is not mandatory).
- *Remarks:* Optional field to include remarks about the official that may be relevant during the collection of information; for example, if they have a disability or other situations that require special support by staff hired by the entity where the official works.

Once DANE receives the information from each entity, data is consolidated and subject to review and debugging in order to build the sample framework that will serve as a basis for the selection of the sample.

Full details of the sample framework are protected by statistical reserve and are not available to the public. However, the numerical summaries of the sample framework used are included in the appendices of the publication.

Definition of variables

The main variables considered in the design of the EDI are the following:

- *Entity:* Full name of the entity, followed by the acronym.
- *Position level:* For the survey, three levels have been identified: Level 1. Manager / Consultant; Level 2. Professional / technical; Level 3. Administration.
- *Sex:* Official's sex 1. Male 2. Female.
- *Fecha_ING:* Official's starting date in the entity's payroll.
- *MUNIC_TRAB:* Municipality where the official performs his/her work most of the time.

Source of data

It is a statistical operation performed by stratified probability sampling. In the entities composed of less than 110 officials, a census is conducted.

Geographical coverage

National total (172 entities of the national level).

Geographical breakdown

By national total, entity, institutional sector and functional group.

Thematic coverage

Institutional environment and performance at the central level of public national entities. Some of the themes covered by the survey are:

- **Work environment:** Motivations to stay in the entity, work expectations, contracting, work environment, performance evaluation, incentives, work harassment, education and training.

- **Resource Management:** adequacy of resources, tools and workspaces, procurement of goods and services.
- **Prevention of irregular practices:** culture of lawfulness, effectiveness of prevention strategies, attitudes toward the reporting of irregular practices.
- **Accountability**: perceptions with respect to the accountability process, knowledge of / participation in accountability actions.
- **Results-based management:** improvement of the entity's performance, evaluation of the institutional management.
- **Service to the citizenry:** service channels.
- **Planning and budget**: planning process of the entity, institutional plans, budget process.

2.2.2. Statistical units

The observation unit is Public officials with a length of service greater than six months in the entity, and who work at the headquarters of the entities of the central level under the executive, legislative and judicial branches, control bodies and electoral organization. In addition, the officials who work at the headquarters of the regional autonomous corporations, public universities, scientific and environmental research institutions located at the regional level.

The unit of analysis is the public entity and the national total; furthermore, results are produced per administrative sector and functional group according to the structure of the state in Colombia, including the entities that make up each sector and group.

Finally, the sampling unit corresponds to the public officials belonging to the entities under study.

2.2.3. Reference and collection period

The collection of the information contained in the questionnaire refers to the period elapsed during the last twelve months of the time when the survey is conducted.

The information is collected annually over six weeks in Bogota and one-month period in the rest of the country. This is performed during the third quarter of the year.

2.2.4. Sample design

Sample framework

For the EDI, the sample framework corresponds to the list of public officials of each of the entities under study. This information is requested, every year, by the territorial offices of DANE to the human resources divisions of the participating entities; ultimately the information is consolidated at the DANE CENTRAL[19].

The framework contains variables that identify the officials: names, surnames and identity card; variables that facilitate their location such as: the entity, the division or area, the municipality where he/she works, the branch and the email. And other variables that characterize them: the position, sex and date of the official's contracting.

In order to identify the framework's over-coverage or sub-coverage issues, each year the number of officials of the entities is compared with respect to that of the previous year; when there are significant differences, information is confirmed and debugged with the collaboration of the source.

It is rare but it can happen that officials are duplicated in the framework; the officials who are identified with this issue can be in two different entities or in the same entity. When the official is listed in two entities it is usually because he/she recently changed jobs, or is in commission. The only exception corresponds to the officials who work in university teaching activities, in these cases, they are not included in the sample selection of the university entity.

The reasons for an official to be duplicated in the same entity generally are: the official had a promotion; he/she is in some form of commission, or due to some typing error. In any case, the information is confirmed with the source in order to proceed to the debugging of the framework in a more appropriate manner.

[19] DANE headquarters.

Sampling type

The sample design proposed for this survey is doubly stratified and the method of selection in each stratum is Simple Random Sampling (SRS). First it is stratified by entities and subsequently by each entity; the stratification criterion is given by the hierarchy of the official's position, with the following levels:

- Level 1: Management, Consultant
- Level 2: Professional and technical
- Level 3: Administration

The stratification aims to ensure that the results take into account the point of view of each hierarchical level. The total number of strata depends on the number of entities and the number of hierarchical levels within each entity.

Definition of the sample size

The ideal of the EDI is to take the point of view of all the officials in the entities under study. However, there are entities whose population exceeds logistical and economic possibilities of the research, which is why, for some entities a sample of officials is made and in others a census is conducted.

In the case of the sample, the number of officials selected within each entity is set in such a way that for a percentage higher than 10% (P), its coefficient of variation (CV) is at least 15%, with the assumption that the design used is a Simple Random Sampling (SRS). This sample size is distributed proportionally among the three strata of the entity.

Therefore the sample size formula, taking into account that N is the number of officials of any entity is as follows:

$$n = \frac{N^2 P(1-P)}{N^2 P^2 (CV)^2 + NP(1-P)} = \frac{N^2 (0.1)(0.9)}{N^2 0.1^2 (0.15)^2 + N(0.1)(0.9)}$$

As a measure to ensure the confidentiality and the statistical reserve of sources for the entities that report less than 110 officials, it is chosen to conduct a census. Likewise, if any sampling stratum in the entity has less than 8 officials, a census is conducted to this stratum.

The sample sizes at the entity level for the EDI are included as an appendix to the published results.

Estimation procedure

Estimators and the expansion factor

The main parameters to be estimated (simple and synthetic indicators) are distributions of absolute, relative and average frequencies. All these parameters are expressed as totals and ratios between totals, particularly absolute frequencies are totals and relative frequencies and averages are ratios between totals. The estimator used to calculate totals is that of Horvitz-Thompson of which the expansion factor is part.

The expansion factor is a numerical value associated with each element of the sample. Its objective is to make the information of the selected element to be represented in the Horvitz-Thompson estimator of the total, part of the set of elements that were not selected in the sample. The construction of the expansion factor is not fortuitous but is the result of the sampling design chosen; it is defined by the inverse of the probability of inclusion of the element selected in the sample.

This text presents the probability of the inclusion of the *k* element as π_k, and the value of the *y* variable for the *k* element as y_k. The Horvitz-Thompson estimator of the population total of the *y* variable in an *s* sample is then defined as:

$$\hat{t}_{y\pi} = \sum_{s} \frac{1}{\pi_k} y_k$$

For example, when there is a design with simple random sampling, the probability of inclusion of the *k* element takes the expression of $\pi_k = \frac{n}{N}$. Where *n* is the size of the sample and *N* the size of the population.

There are two types of partitions with respect to the population that are taken into account in the calculation of estimators. One partition creates groups called strata, and the other creates groups called domains. The conceptual difference between the two partitions of the population lies in the role they perform. The partition into strata assigns an independent sample design to each stratum inducing specific samples and probability of inclusion by stratum s_h and π_{hk} respectively. On the other hand, the partition into domains enables generating results for any breakdown of thematic interest.

In a stratified design in *H* strata, the estimator of the total population, of the *y* variable, takes the expression of:

$$\hat{t}_{y\pi_H} = \sum_{h=1}^{H} \hat{t}_{y\pi_h} = \sum_{h=1}^{H} \sum_{s_h} \frac{1}{\pi_{hk}} y_k$$

Where $\hat{t}_{y\pi_h}$ is the estimator of the total of the *y* variable for the population of the ***h*** stratum. In the case of a design with a simple stratified random sampling, the probability of inclusion of the *k* element in the ***h*** strata takes the form of $\pi_{hk} = \frac{n_h}{N_h}$. Where n_h is the size of the sample in the ***h*** stratum and N_h is the size of the population size of the ***h*** stratum.

For a *d* domain of the population in an *s* sample, the total of the *y* variable takes the form of:

$$\hat{t}_{y_d\pi} = \sum_{s} \frac{1}{\pi_k} y_k z_{dk}$$

With $z_{dk} = 1$ if the *k* element belongs to the *d* domain and $z_{dk} = 0$ if it does not.

If it is intended to estimate a *d* domain under a stratified design in *H* strata, the estimator of the total population, of the *y* variable takes the form of:

$$\hat{t}_{y_d\pi_H} = \sum_{h=1}^{H} \hat{t}_{y_d\pi_h}$$

Where $\hat{t}_{y_d\pi_h}$ is the estimator of the total of *y* variable in the *d* domain for the population of the ***h*** stratum.

The other typical parameter estimated for the survey is the parameter of the ratio between two totals. Given *y* and *w* two variables of interest, the estimator of the ratio between the totals of the *y* and *w* variables with an *s* sample, is defined as:

$$\hat{R} = \frac{\hat{t}_{y\pi}}{\hat{t}_{w\pi}}$$

Note that both the numerator and the denominator are Horvitz-Thompson estimators of totals. For the stratified design in *H* strata, the estimator of the ratio between totals, of the *y* and *w* variables, take the form of:

$$\hat{R}_H = \frac{\hat{t}_{y\pi_H}}{\hat{t}_{w\pi_H}} = \frac{\sum_{h=1}^{H} \hat{t}_{y\pi_h}}{\sum_{h=1}^{H} \hat{t}_{w\pi_h}}$$

For a *d* domain of the population in an *s* sample, the estimator of the ratio between totals, of the *y* and *w* variables takes the form of:

$$\hat{R}_d = \frac{\hat{t}_{y_d\pi}}{\hat{t}_{w_d\pi}}$$

If it is intended to estimate the *d* domain in a stratified design in *H* strata, the estimator of the ratio between totals, of the *y* and *w* variables, takes the form of:

$$\hat{R}_{dH} = \frac{\hat{t}_{y_d\pi_H}}{\hat{t}_{w_d\pi_H}} = \frac{\sum_{h=1}^{H} \hat{t}_{y_d\pi_h}}{\sum_{h=1}^{H} \hat{t}_{w_d\pi_h}}$$

The most general manner of expressing estimators of total and of ratio are the $\hat{t}_{y_d\pi_H}$ and $\hat{R}_{dH}$ respectively, because the formulas of $\hat{t}_{y\pi}$, $\hat{t}_{y\pi_H}$, $\hat{R}$ and $\hat{R}_H$ are a particular case of $\hat{t}_{y_d\pi_H}$ and $\hat{R}_{dH}$, it is only necessary to define the domain variable (z_{dk}) in a proper manner. Therefore in the description given further with respect to the indicators, the general form of estimation will be taken, i.e. totals with $\hat{t}_{y_d\pi_H}$ and ratios with $\hat{R}_{dH}$. Each estimator calculated with the probability of inclusion of the *k* element per $\pi_{hk} = \frac{n_h}{N_h}$ associated with a design with stratified simple random sampling.

Variance estimators of the indicators

For the case of the stratified simple random sampling, the variance estimator with respect to the estimator of the total has the general form $\hat{t}_{y_d\pi_H}$ is:

$$\widehat{VAR}\left(\hat{t}_{y_d\pi_H}\right) = \sum_{h=1}^{H} \frac{N_h^2}{n_h}\left(1 - \frac{n_h}{N_h}\right) S_{hy_d}^2$$

Where $S_{hy_d}^2 = \frac{\sum_{s_h}(y_{dk} - \bar{y}_d)^2}{n_h - 1}$: is the sampling variance of the *y* variable with *d* domain, symbolized as y_d, of the s_h sample taken from the ***h*** stratum. On the other hand, in order to construct the variance estimator with respect to the estimator of the ratio for the general form $\hat{R}_{dH}$ (see above), between the totals of the *y* and *w* variables with *d* domain, firstly new variable u_d needs to be calculated for each *k* element:

$$u_{dk} = \frac{1}{\hat{t}_{w_d\pi_H}(y_{dk} - \hat{R}_{dH} w_{dk})}$$

Where $y_{dk} = y_k z_{dk}$ and $w_{dk} = w_k z_{dk}$ with $z_{dk} = 1$ if the *k* element belongs to the *d* domain and $z_{dk} = 0$ if it does not. The variance estimator with respect to the ratio is equivalent to the variance estimator with respect to the total of the new variable u_d:

$$\widehat{VAR}\left(\hat{t}_{u_d\pi_H}\right) = \widehat{VAR}\left(\hat{R}_{dH}\right) = \widehat{VAR}\left(\frac{\hat{t}_{y_d\pi_H}}{\hat{t}_{w_d\pi_H}}\right) = \sum_{h=1}^{H} \frac{N_h^2}{n_h}\left(1 - \frac{n_h}{N_h}\right) S_{hu_d}^2$$

Where $S_{hu_d}^2$: is the sampling variance of the *u* variable in the ***h*** stratum with *d* domain.

With the estimated variance of the total or the ratio, the estimated coefficient of variation of the parameter can be built as a precision measurement, the idea is that the lower the estimated coefficient of variation cve[20], there will be less uncertainty on the estimation, its formula is:

$$cve = 100 * \frac{\sqrt{\widehat{VAR}(\hat{\theta})}}{\hat{\theta}}$$

Where $\hat{\theta} = \hat{t}_{y_d\pi_H}, \hat{R}_{dH}$ corresponds to the estimated value of the parameter of interest.

A confidence interval of 95% may also be defined:

$$IC(\hat{\theta}) = \hat{\theta} \pm 1.96\sqrt{\widehat{VAR}(\hat{\theta})}$$

2.2.5. Coverage adjustments

Correction for non-response

There are two types of non-response with respect to the elements in the sample. The first one is the total non-response and it occurs when none of the variables has information. The second one is the partial non-response and it occurs when at least one of the variables has information.

With regard to the total non-response, it is found that there are no particular factors within the sampling strata that caused it; hence it is assumed that the non-response is random within the stratum. For this situation and in order to avoid bias, the correction

20 Acronym in Spanish for estimated coefficient of variation as it is shown in the formula below.

is made by an adjustment factor that multiplies to the expansion factor. The factor is constructed by stratum and takes into account the following:

- *Elements outside of the universe:* It refers to all those selected in the sample which do not belong to the universe of study; among these are public officials who do not belong to the entity because of retirement or death.

- *Elements with no information:* It corresponds to the elements that belong to the universe of study, but information is not obtained from them. Within this group are the officials that were unavailable during the field operation and those who refused to answer the survey.

The adjustment factor for the total non-response is defined as:

$$= \frac{n_h - n_{fuera\ del\ universo\ (h)}}{n_h - n_{no\ respuesta\ (h)} - n_{fuera\ del\ universo\ (h)}}$$

Where

$n_{no\ respuesta\ (h)}$: Is the total public officials selected in the ***h*** stratum that do not belong to the universe of study.

The total public officials selected whom, even though they belong to the universe of study in the **h** stratum that did not answer the questionnaire.

With regard to the partial non-response, the treatment is to impute the data through the Hot-Deck method. It should be noted that the procedures for the collection of information have minimized non-response rates within strata therefore data to be imputed are few. In order to avoid bias, in the imputation, donors are sought that have the same characteristics, particularly the donor taken in this survey should belong to the same entity and have the same position level that the recipient.

2.3. EXECUTION DESIGN

2.3.1. Training system

Training

DANE Central performs the training to the officials commissioned by Territorial Directors of DANE in its facilities. The training is provided by professionals who make up the thematic, statistical, logistical and IT teams of the study. The training is performed through a course that lasts one and a half (1.5) days for staff that have already participated in this project and two and a half (2.5) days for staff who have not received training in this respect. Five fundamental aspects are discussed:

- Objectives and background of the EDI.
- Thematic design of the survey and changes with respect to the previous year.
- Aspects pertaining IT: completion of the survey by means of the DANE website and the downloading of surveys to the database.
- Field operation.
- Operation simulation.

Thus, territorial branches have sufficient information to replicate the training to monitors, supervisors and coordinators; for the management of the operation in each, according to the staff assigned to each branch or sub-branch.

2.3.2. Preparatory activities

Awareness raising

This activity is developed in two stages: a general one performed by DANE Central, and another led by the Territorial Divisions, both for public entities in Bogota and for regional autonomous corporations, universities and research centers located in other cities.

- *General:* It is the process of the first approach to the entities under study, which is conducted during the first half of the year. This stage is led by DANE Central, who provides the guidelines so that the renewal and updating of the database with

respect to the payroll of each entity is requested to the human resources divisions thereof through the Territorial offices.

- *Territorial:* It is the second approach to the entities led by the coordination of the operation, in which the following steps are envisaged:

  - Awareness raising communication from DANE addressed to the directors, ministers and heads of the entities, signed by the Director or Deputy Director of DANE, informing them of the carrying out of the survey and operational coordination through the Human Resources, Talent Management or their equivalent in each entity.

  - Communication from the Territorial branches of DANE addressed to the Heads of the Human Resources divisions of each of the entities, informing them of the carrying out of the survey and requesting their collaboration for the collection logistics.

  - Communication from the Territorial Branches of DANE to the officials in levels 1 and 2, with the objectives of the survey and the respective usernames and passwords needed in order to access the electronic questionnaire from anywhere on the Internet.

  - For the officials in level 3 a meeting room will be assigned together with the head of the Human Resources division so that they complete the survey by means of the hard copy questionnaire (if it is not possible to conduct the survey via the electronic questionnaire).

  - Promotion and dissemination of the survey within each of the entities by means of the delivery of information and awareness raising handouts alluding to the survey, where answers are provided to common questions about the EDI.

Selection of staff

The process for the selection of staff required for the field operation, particularly for the Territorial Branch Bogota, starts by means of an open call. The applicant should submit his/her resume and meet the requirements set forth in the profiles established for each role, i.e. field coordinator, supervisors and monitors.

With the staff enrolled, a pre-selection is performed that can be applied to the survey and a summons is made for the corresponding induction. The Territorial branches follow this procedure but only for the role of monitor.

The course provides the thematic, operation and IT concepts of the survey; it is carried out over two (2) days and concludes with a theoretical and practical evaluation where applicants are asked about methodological and operational aspects of the EDI. With the results of the evaluations, a list of candidates is made and finally those with the best scores are selected to work in the field operation of the EDI. The selected staff will have contracts drawn for the provision of services that enable starting the fieldwork.

2.3.3. Design of instruments

Among the instruments designed for the development of the survey are the following:

a. ***Completion Manual:*** It provides an overview of the EDI along with the instructions for completing each of the questions that comprise the questionnaire, in order to address questions that may be posed by the operational teams of the surveys in the field.

b. ***Operational Guidelines Manual*:** It records the different aspects to be taken into account in the development of the field operation in terms of: hiring, duties of the field staff, the collection system, sending information, schedule, workloads, and budget, among others.

c. ***User Manual:*** It specifies the steps to be followed at the beginning and end of the data collection in the field through electronic data capture applications.

d. ***Capture System Manual:*** It describes the development of the data collection application and the loading, validation, coverage control and production application.

e. ***Novelties and reports manual:*** It specifies the steps to be followed in order to keep track and monitor the process of gathering information via web of the EDI.

f. ***E-001 novelties form:*** It records the reasons that prevented the official from completing the survey (which are recorded as novelties); this form should be completed by the monitor during his/her stay in the entity (one form per entity is completed) and at the end of the survey, it should be signed by the head of the human talent division or its equivalent in the entity, who endorses these novelties. (Appendix B).

g. ***E-002 Coverage Control form***: It helps the monitor and supervisor to keep track of the officials who expressed their willingness to complete the survey on hard copy. (Appendix D).

h. ***E 003 data entry quality control form:*** It enables the supervisor to verify the quality of the entries on paper forms for the web-based application and thus take the necessary corrective measures to correct any inconsistencies that are detected. (Appendix C).

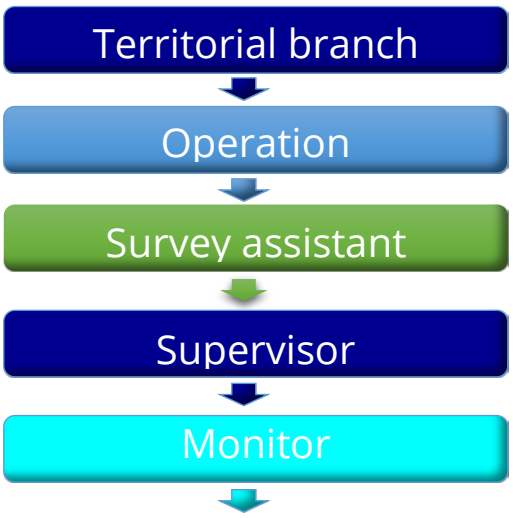
i. ***Correction of data entry errors form;*** It collects the requests made by respondents who committed some unintentional mistake when answering the survey, or when errors are detected during the process of entering the paper forms. This request will be sent to the DANE Central by the branch and / or sub-branch with the respective support for correction. (Appendix E).

2.3.4. Data collection

Operation Chart

In order to carry out the operation of the survey in a swift and efficient manner, an operational team has been created that works as shown below:

Figure 4. Operation Chart



Source: DANE. EDI Logistics.

Overall per each supervisor there are groups of 2-4 monitors and per each field coordinator there are 6 supervisors.

Operation Coordinator: He/she is an official on DANE's payroll who is responsible for the operations that are conducted at the branch / sub-branch. His/her role is to be a liaison between the territorial division head and DANE Central, in addition to ensuring that all the logistical conditions for the carrying out of the field operation are met.

Technical assistant: He/she is responsible for coordinating the fieldwork in each of its phases, the printing and sending of letters to each of the entities, organizing the entire operational team in order for them to carry out the respective contacts and visits, and to perform the monitoring of the actual coverage of the survey. This role is always given to an official in DANE's payroll responsible of the survey.

Field Coordinator: He/she is responsible for the implementation of the operation in entities at the central level, as well as for the monitoring and control of the collection process of the team. He/she ensures that operations are carried out in accordance with the planning established and on schedule, in addition to ensuring the quality of information; he/she delivers elements necessary to carry out the fieldwork. His/her tasks, duties and responsibilities cannot be delegated*. It only applies to Bogota, in the other branches / sub-branches these obligations are undertaken by the technical assistant of the survey.*

Supervisor: He/she is the person responsible for the coordination and control of the activities scheduled in the development of training sessions and self-completion of the survey in the entities assigned to the monitors. He/she ensures the proper fulfillment of these activities.

Each supervisor (where they are present) is in charge of two groups of monitors and shall distribute each group to a different entity. It applies to the cities of Bogotá, Cali, Medellín and Villavicencio; in other cities the technical assistant and monitors undertake these functions.

Monitor: He/she is in charge of visiting the selected public entities, delivering the communications to each of the officials selected in the sample, addressing the questions of respondents, performing the completion when the use of hard copy forms is required, the transcription of the hard copy forms to the web application, and keeping track of the difficulties that arise in the field.

In the cities where there are no field coordinators or supervisors, the monitor is the person who has the great responsibility of carrying out the necessary awareness raising activities in the entities that are assigned to him/her during the collection period.

Operation scheme

The operation scheme has a preparatory stage prior to the collection and consists of five phases, namely:

1) Coordination activities

The human resources divisions of the entities should have a room available for carrying out a minimum of three daily sessions (each hour and a half) for instructions and completion of the survey to the officials of level 3 that are selected, during the days that have been programmed for the respective collection.

2) Notification of the officials selected

Human resources divisions will receive the list of the officials selected in levels 1, 2 and 3 as well as instructions for completing the survey.

3) Record of the staff novelties in the respective form

For those officials having been selected to complete the survey but who are not able to do so for any valid reason, human resources divisions should record the novelty under the relevant column of the PES-EDI-MOT-02 -r 1 operational control form (Appendix B). This form should be subsequently submitted to the supervisors or monitors of the DANE territorial branch, as appropriate.

4) Entry of the hard copy questionnaires

In the cases where the use of hard copy questionnaires is required, the monitors should verify their proper completion during the collection period.

Once the completion has been verified, the information is subsequently transcribed into the electronic questionnaire located on the DANE website. For this effect, each of the officials selected in the sample is assigned a username and a login code, which is used to transcribe the information from each of the hard copy questionnaires completed, which are subject to quality checking in order to detect inconsistencies in the transcription. If inconsistencies are found, these are reported to DANE Central in the PES-EDI-MOT-02 -r 3 data entry quality control form (Appendix C).

5) Attendance record

During the questionnaire completion sessions, the monitor in charge of the collection should record the attendance of the officials in the PES-EDI-MOT-02 -r 2 Coverage Control Form (Appendix D).

For the development of each session the following guide shall be fulfilled:

Presentation

For the entities with headquarters in Bogota, sessions are scheduled according to a schedule previously established. This schedule specifies the date and time of the session per entity, the number of sessions needed to cover the sample selected and the monitors attending each. Two monitors should attend each session, which will be supervised by one supervisor, who in turn will be responsible for three other groups of monitors.

With respect to the entities whose branch is outside of Bogotá, it should be sought that two members of DANE's operational team perform the sessions; however there are entities whose sample is not very extensive and they can be undertaken by only one monitor.

In each session the meeting room monitors will make a brief presentation on the following topics:

- *Objectives of the survey:* a presentation about the purposes of the survey, highlighting that it is intended to capture the perceptions that the officials have with respect to the institutional environment and performance of the public entities at the territorial level.
- *Background of the survey.* Its beginnings and the continuity that DANE has given to the project annually.
- *Entity responsible for the survey*: it will be mentioned that this is a project undertaken by DANE.
- *Confidentiality and statistical reserve:* it is indispensable to indicate to the respondents that the data provided are of a confidential nature and that they do

not have tax purposes nor can they be used as evidence in court. Also, that DANE is obligated to maintain statistical confidentiality of the information requested, in compliance with Article 5 of Law 79 of 1993.

- *Provision of the questionnaires to each official:* subsequently each official will be provided with the questionnaire, according to the identification record in the attendance form.

Instructions and handling of the questionnaire

While one of the monitors gives instructions on the handling of the questionnaire, the other one advises the attendees and resolves the questions until he/she is assured that they are all able to properly start the self-completion.

Subsequently, the monitor will explain the mechanics of the self-completion of the survey, which consists of the following:

- Explanation of the design and content of the form.
- Reading of the questions and sections thereof by the monitor and clarifications that he/she deems appropriate regarding the contents thereof.
- Clarification of the concepts and terms included in the survey and that show as aids in the text of the questions.
- Time for officials to include their answer to each question, in a free and individual manner, before proceeding to the next question.

Methods and mechanisms for collection

Auto-completion with electronic form via the website

The data collection operation includes a first component by the self-completion method to answer the survey, through the DANE website. For the completion of the survey, the officials should complete the questionnaire by means of their own

computers with an Internet connection in the entity, or from anywhere with an Internet connection where they are able to access the DANE website.

For the officials who, due to any reason, are not able to complete the survey by means of the electronic form, are invited to do so using hard copy questionnaires. The completion by this instrument is organized in sessions that are coordinated with the human talent division of each entity.

The human resources divisions of the entities records the novelties of those respondents who had been selected to complete the survey but are not able to do so due to a justified reason. The corresponding novelties are listed under the relevant column (see Appendix C). The form that compiles such novelties is submitted to the monitor of the DANE Territorial branch.

Each of the selected officials receives a personalized communication that indicates the instructions to access the survey, the username and password that have been assigned to him/her, and the dates for the completion of the information. Once the collection period that has been scheduled for each of the entities has started, within the collection period of the survey, the selected respondents can enter the DANE website, access the survey and perform the completion; in an individual, free and confidential manner. At the end of the completion, each official is provided with a verification code with which he/she can subsequently confirm the status of his/her survey.

The surveys go directly to the DANE Central database for their further processing. Once the survey has been completed, a filing number is indicated to each official as evidence. At this stage, respondents may enter the website and access the survey again in order to verify the completion, but will not be able to make corrections or modifications.

In case of doubts or questions, the respondents may inquire as to the aids included in the electronic questionnaire or communicate by e-mail or phone with the operational team in each territorial branch (data are included in the personalized communication that they received), who will address the questions.

Self-completion assisted with hard copy forms

The second component is the method of assisted self-completion of the survey, with hard copy questionnaires. This completion method is primarily aimed at officials in level 3 (Administration) or those officials who are not able to complete the electronic questionnaire due to technology issues. In order to complete the survey with this method, the officials should attend a training session scheduled in their own entities as follows:

- For the entities where the web-based questionnaire is not possible to be completed due to technological limitations, the collection is made in hard copy questionnaires, regardless of the position level.
- The surveys completed by means of this method are then transcribed onto the web application by monitors of the EDI.

Data transmission to DANE Central

With the collection method by electronic form, information is transmitted online to a database structured in ORACLE, which enables data to be stored and viewed in real time as the user completes the survey.

- The IT division in DANE establishes different user profiles with clearance levels defined according to the role they play in the operation, users are:
- Entity official, who self-completes and checks the survey through the website.
- Call Center operator, who checks the status of the operation, the coverage report and the list of active users selected per entity.
- Territorial coordinator, who inputs the novelties, checks the status of the operation and the coverage reports.
- Thematic or operational team administrator, who checks the status of the operation and coverage reports.
- Database administrator, who has control and full responsibility for the information stored in the database.

The backups of databases on the Oracle server are performed automatically and are programmed to do so daily on an established schedule. This activity is the responsibility of the Database administrator of DANE Central.

Coverage control

This is done by comparing the totals of the sample against the total records in the database, if there are differences, their location need to be established by entity and the respective measures need to be taken.

Considering that the information completed is uploaded directly to the DANE server, there is an online inquiry application, whereby, in real time, it is possible to know the progress of the field operation, identifying the amount of surveys completed, those not yet completed, incomplete and the novelties that have arisen.

By means of the coverage enquiry application, daily reports are generated on the progress of the field operation from the information collected through electronic forms; they are disaggregated by entity in order to establish the necessary actions needed to increase the coverage percentage by entity.

2.4. IT DESIGN

Design of tools

The software is the logical and intangible part in the construction of the information system and key aspects such as the database, programming languages and the operating system are framed under this concept. The logical component of the electronic form used in the EDI is addressed below.

The software features that need to be supported by the computers that serve as applications and database servers are as follows.

- Google Chrome, Mozilla, Safari and Internet Explorer 8.0 web browser or higher
- Windows 2000 and older

- Dreamweaver MX 2004 – Web pages editor
- Oracle 10g – native database
- Apache version 2.0 - Web applications server

The application and database server computers have all the computer security policies that the DANE IT division has for these data collection operations.

In order to complete the survey, the officials are required to have Internet access and use of an Internet browser.

The survey forms have a 6-digit identification number that is not repeated and which makes it unique. Additionally, there are users and passwords generated from the sample to ensure the security in the designated servers.

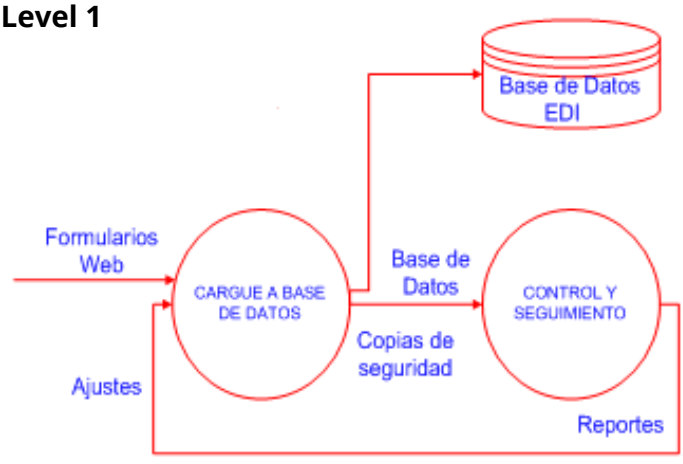
The capture process is the first level of data processing; it takes as input the electronic forms completed by each of the officials.

This process consists of sub-processes, identified as follows:

- Load to Database
- Coverage control and monitoring

Capture Process Diagram

Level 1



Source: DANE. EDI IT

The collection of information by electronic form is connected to the database online, and the information completed on the form is stored in the Oracle database, which is installed on DANE server.

The process of loading to the Oracle database is performed on the DANE database server arranged for the EDI.

A last step in this chain involves coverage reports that facilitate the control of the collection and thematic reports that are sent to the Operation Coordinator; they also enable the study's thematic team to analyze the variables or fields that make up the survey form.

The coverage reports enable the differences that may arise regarding the selected sample to be analyzed, and they are verified with respect to the record of novelties sent by each branch and sub-branch, in order to make appropriate adjustments in the database. After correcting the differences that had arisen, it is deemed as the final product of the process with the Survey database, which is submitted to the statistical team as input for the following steps of data processing.

- **Consolidation of files**

The received files are subject to a transformation process that allows the reading and loading of the information to the database.

The structure of the database is divided into: a sample table, and control tables, as well as those containing the collected information with respect to the different chapters of the survey.

The tables of the database are inter-related, according to the normalization rules, in addition to criteria such as: Primary key, foreign key and indexes, which enable a better inter-relation, performance and functionality in the database.

Once the files are transformed, the process of loading to the database is started; the information contained in the files is read, validated, organized and finally loaded.

The main classification criterion at the moment of generating reports displaying the information stored, is the political-administrative division of the country; these reports are generated both at the national, departmental and municipal levels, as well as by entities selected in the sample

Data processing

Verification of the internal consistency of data and adjustments

With the information consolidated in the database, validation procedures and the generation of inconsistency reports are executed (according to the validation and consistency rules document) in order to ensure the quality of the information collected in the operation. Once the inconsistencies have been identified through a user interface, the adjustments are made to the records of the database, affected if applicable.

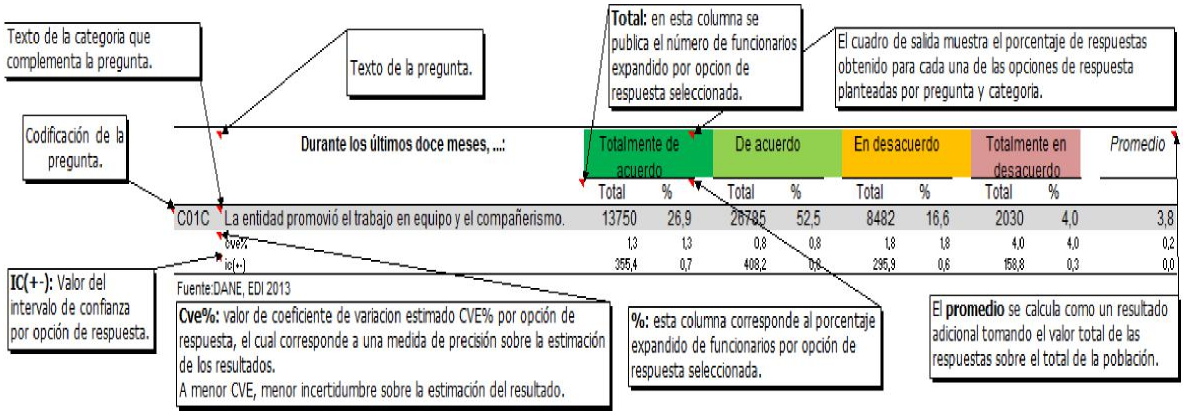
The main type of internal inconsistency that can occur are duplicates records in the database; with this a report is generated that is sent to each territorial branch for verification by the operational team, which once they have consolidated and evaluated the field records with respect to those sent, report any irregularity found to DANE Central. At this point, the IT team assigned to the survey is in charge of making the appropriate changes and the final consolidation of the database.

Generation of output tables

The EDI output tables are designed from the questionnaire structure and according to the levels of disaggregation proposed for the study.

The following table describes the elements that compose the EDI output tables.

Figure 5. Output table description



Source: DANE. EDI Thematic expert.

The output tables are published for the following levels of disaggregation:

- National total
- National total by hierarchical level: Management / consultant level; professional / technical level; Administrative level
- National total by length of service in the entity: from six months to six years; from 7 to 11 years; from 12 to 16 years; from 16 years and more
- Total national by sex: female, male
- Total by each of the entities
- Total by institutional sector
- Total by functional group

It is usually considered that the result of an estimation is good if its coefficient of variation is less than 5%; acceptably practical, between 5% and 10%; low accuracy if it is in the greatest range of 10% and less than 15%; and not useful if it is greater than 15%.

In order to better understand the meaning and the different values taken by the coefficients of variation in the tables shown, it should be noted that the sample design was performed to obtain highly accurate estimates at the national level by entity. Estimates for other disaggregation levels (such as sector) are subject to their precision not being necessarily good and therefore the data does result as reliable.

It is for this reason that some tables, for example, may have the total of a variable at the national level and by some analysis category with small coefficients of variation, whereas for other categories of the same variable, the estimated Coefficients of Variation - cve[21] - are very high, sometimes 30% or even greater than 100%. In these cases, DANE published the figure even though it is not reliable, so that in the output frame, information with respect to totals is consistently observed; and because by means of simple arithmetic operations, the user can deduct the value corresponding to that estimate. However, it is very important that users of information are aware of the information of the low level of accuracy that these estimates have.

For the preparation of output tables three macros are used, which in turn use the main macro of estimation by stages. With this method it is possible to generate output tables with all the frequencies for the questions of the survey and the tables with the environment and performance indicators.

[21] Idem as for footnote 20 above.

2.5. DESIGN OF QUALITY CONTROL METHODS AND MECHANISMS

At the operation level, different kinds of mechanisms are used for the control of the information received from the field with the purpose of securing, maintaining and give consistency to the information of each of the entities of the study. The controls and indicators that are used from the technical teams of the EDI are mentioned below:

Videoconferences

At the beginning and in the course of the development of the field operation, videoconferences are held with the persons in charge of the study in the branches and sub-branches, in order to provide clarification to the questions that arose in the training and standardize the data collection process. For this effect, the recommendations of Thematic, Sampling Designs, Logistics and IT teams are taken into account.

Validation and consistency rules

The thematic, statistical and IT teams verify that the final development of the collection forms comply with the determined design of validation and consistency rules established for this survey. This process is carried out by the teams involved in the development. These tests are performed before the start of the field operation in order to seek potential errors, in addition to unifying concepts with respect to the forms.

Supervision and control

The supervision and control of the progress in the collection operation is performed directly by means of a coverage report that is provided to the DANE Central IT division, and that should be monitored daily by each of the persons responsible for branches and sub-branches. This report allows the observation of the coverage number, percentage and graph with respect to the total of the sample selected for each of the entities.

When analyzing this daily report, the supervisors and monitors, communicate with the human resources divisions to summon or invite those who have not accessed to complete the survey to do so, in order to increase the number of completed surveys and the coverage by entity.

Accompaniment in field

Periodically, both the persons responsible for the branches and sub-branches, and the EDI technical teams in DANE central, provide an accompaniment to field teams in order to observe their performance and detect weaknesses that may affect the quality of the information collected.

The development of each process is evaluated independently, intending to verify that the instructions provided from DANE Central are correctly complied with. Many aspects such as personal presentation, ownership of the structure and the issues addressed by the survey, the non-induction of responses and the management concepts are observed. Also the correct daily distribution of work materials, the completion of forms, the proper management of transport, review of the surveys by the supervisor, and the ability to create an environment that is propitious to the sources that allows the optimum development of the survey.

All the aspects to be improved are socialized with those responsible for the survey in each branch and sub-branch, and monitoring is made to the implementation of the solutions and the corrections that are necessary.

Control instruments for supervision

The coverage reports are generated daily that can be viewed online by the operational team assigned to the survey. These reports allow monitoring the development of the survey and verify together with DANE Central the manner in which the operation is being performed.

Along with the reports, the status of the operation can be enquired by department filtering by entity; also by the type of survey status, which can be: complete, incomplete, not completed or with any novelty.

Indicators for the quality control of the study's processes

The EDI generates three quality indicators:

Quality indicator of results report: It establishes the quality of the results report. It is measured by five key dimensions, which are as follows:

- Relevance of the theme (for public policy)
- Contribution to the field of statistical knowledge
- Accuracy in the calculation of Indicators
- Methodological and descriptive consistency (from objectives to results)
- Clarity in the presentation of the results

Each dimension is assigned a value of 20 points. Subsequently, the partial results are added in order to obtain an overall measure with a base of 100.

Indicator of effective sample applied: It establishes the number of persons who took the survey in order for it to be representative. It measures the effectiveness of the collection process.

$$\frac{\text{Effective sample}}{\text{Selected sample}}$$

Indicator of the timeliness with respect to the publication of the results document: It measures the timeliness of the publication of the EDI results document.

(Date in which the collection is completed + 2 months) - (the number of months in which it is published once the collection is completed)

2.6. PILOT TESTS DESIGN

For the optimal performance of the collection instrument and as part of the operational guidelines, the adjustments made to the questionnaire are subject to desktop tests and application tests in order to assess the performance and potential improvements that can be made to the collection questionnaire.

During the desktop tests, participants perform the completion of the questionnaire in order to detect and prevent issues that may arise in the course of collection related with the wording of questions, phrasing and comprehension of texts and concepts used, continuity of the topics, the sequence of filters and completion time.

The questionnaire is sent to the IT division with the validation and consistency rules document and the data dictionary in order to start the development of collection and query applications. Subsequently test usernames and passwords are assigned so that, different persons complete the electronic questionnaire in test mode through DANE internal network. These tests enable verifying the functioning of the validation and consistency rules, the transcription of texts, the completeness of the database, the coverage reports and the aspects related to the physical presentation of the application as well as the user interaction.

2.7. DESIGN OF ANALYSIS OF RESULTS

2.7.1. Statistical analysis

Firstly, it contains the calculation of the frequencies of all the nominal variables measured in the survey. With the results of each variable, the characteristics of each entity under study are determined in terms of institutional environment and performance.

Subsequently, the descriptive analysis of the data is performed, which seeks to observe the behavior of the sample under study by means of the corresponding tables, graphs, confidence intervals as well as tendency and dispersion statistics. In the sample, the structure of the indicators is analyzed by study domains from the frequency distribution, which enables the detection of possible inconsistencies and atypical values. The coverage is subsequently verified by the level of disaggregation.

2.7.2. Context analysis

The most important process that can be generated with the results of the EDI is the comparability over time, in this sense the results obtained enable the entities to have values by frequency and annual indicators and thus it is possible to compare their behavior year after year. On the other hand, with the annual results of each variable, the entities may make comparisons with respect to the institutional sector to which they belong, or to the functional groups according to the legal nature of the entity.

A coherence analysis is also performed, by the enquiry of information from other sources that study topics related with public entities, in order to compare the results obtained during the term and check the internal consistency of the data and the behavior of the EDI variables and indicators. Some of the sources enquired are the National Transparency Index prepared by Transparency International and the Integrity Index of the Attorney General's Office.

2.7.3. Committees of experts

In order to ensure consistency and clarity in the results, committees, both internal and external are also held, composed of: the EDI working team, DANE professionals, managers and experts; in addition, independent experts and representatives of national entities, multilateral organizations and academic institutions involved in the subjects under study, may also be assigned to the committees.

These committees enable the development of internal debates, the socialization of the results and make suggestions that only focus on the continuous improvement of the survey.

2.8. DESIGN OF DISSEMINATION

2.8.1. Data repository management

The management of the microdata information after the delivery of the database is completely computer-based. A statistician who assigns an identifier to each individual of said database, which links the information in each row to a specific microdata stored separately, performs it. The purpose is to avoid the explicit recognition and especially the direct recognition of an individual unless it is necessary for reasons of a loss of information that is key for the purposes of the study or by conducting a new survey due to the unacceptable amount of atypical information.

The microdata is disconnected from the processing database, but the code that links the microdata to the specific individual is available. Decryption is done with a program built in SAS (version 9.0) that is handled with absolute reserve and where the information query requires prior authorization.

The metadata treatment is only available by means of officially published results. Even though global reports can be generated on every possible level of disaggregation, the information is only available as long as there is satisfactory confidence and a level of precision for the statistician and for the individual who processes the information. The database is protected by means of a tool established in SAS (version 9.0), which enables it to have the appropriate formats of the variables recorded available so that the reporting programs work correctly. The programs are designed to debug the database, impute it and make the adjustments before the generation of reports; something that cannot be available unless the appropriate commands are run, and with this the final database is protected.

Macro data are currently not available unless they are explicitly requested. The database can generate reports at the macro data level, losing the particular information of the rows. For historical values, only the output tables have been have been preserved with the corresponding estimations and coverage with respect to the periods in which the survey was carried out. These reports are handled in Excel Pivot Tables.

DANE has started publishing anonymized databases on its website, for the purpose of achieving greater transparency in studies and to facilitate the replicability of results. To this effect, it has designed the National Data Archive (ANDA, for its acronym in Spanish) repository based on the Accelerated Data Program (ADP) of the World Bank whose purpose is to document, disseminate and preserve microdata according to international standards and practices.

The National Data Archive (ANDA) is a catalog where users are able to browse, search, compare, request access and download information related to censuses, sample surveys and statistical use of administrative records.

From year 2013, the anonymized database by regions of the survey is available, complying with legal obligation to protect the personal information of respondents. Therefore, the possibility of identifying individuals who provided the information is not allowed, this is done in order to comply with the statistical reserve to which DANE is obligated.

In the event that the anonymized database is required by an entity, information is available as "data files with Access License". For this type of information the user should fill-out a form for use of such information, in order for him/her to be allowed access in order to download the database.

2.8.2. Dissemination products and tools

For the publication of results, meetings with the working committees of the survey are held in advance, in which a presentation is made with respect to the main results of the study and the main remarks and suggestions from the committee attendees are collected in order to include them in the products to be published. Subsequently, several dissemination documents are prepared, among which are: the results report, executive summary and bulletin for portable electronic media.

The annex files with the estimated results of each of the variables of the survey are published on the DANE website, as well as the institutional environment and performance indices with their associated components. All published results are presented with the information corresponding to the estimated coefficient of variation and confidence interval. Additionally, results can be enquired by national total, entity, sex, time of service and hierarchical level.

Periodically, DANE updates the date of publication of results by means of the annual release calendar of the entity; this information is available on the DANE website (www.dane.gov.co).

The results of the survey are also disseminated on the website, where they can be enquired by accessing the link Education, culture and governance // EDI national level. The published information includes different types of documents: Results bulletin, press release and the annexes.

The annexes are files in Excel that include presentation tables containing the results of the total questions of the survey. In the annexes, information is disaggregated by national total, sex, and length of service and the hierarchical level of the officials, entities, institutional sector and functional groups.

Due to methodological changes and adjustments in the questionnaires, the information published is fully comparable as of year 2010 onwards. From this year the results are published with the various levels of disaggregation described above.

2.9. DESIGN OF THE EVALUATION

It is essential to evaluate the EDI so as to ensure the quality of information and continuous improvement of the statistical operation. Several exercises are performed that serve this purpose.

First, the operational reports sent by the branches and sub-branches are reviewed, subsequently the logistics team of DANE central consolidates these reports into a document with the thematic, operational and IT comments. This document allows the technical teams to know and understand the operational conditions under which the information was collected. This information is a source of context and alerts on possible circumstances that may affect the quality of the information or the behavior of results.

A comprehensive review of the database is performed in order to analyze the frequencies and to identify inconsistencies and possible gaps in the data collection instrument, and make the necessary adjustments to be applied to future collections. In this sense analysis is performed question by question and the frequencies that they have had are observed.

The reasons why there are low and high frequencies and how to proceed with these options are considered.

Finally the evaluation phase is complemented by the involvement of external actors who are knowledgeable in the topic. After the internal exercise, another is performed with those competent entities that have been identified and the changes as well as their justifications are reviewed. The debate with all entities is simultaneous, which promotes interaction of different views. A document is prepared compiling all the comments that may have been left out.

3. RELATED MATERIALS[22]

Manuals

National Administrative Department of Statistics (DANE). Institutional Environment and Performance Survey, Completion Manual (EDI). Bogotá.

_____. Institutional Environment and Performance Survey, Operational Manual (EDI) Bogotá.

_____. Institutional Environment and Performance Survey, User Manual (EDI) Bogotá.

_____. Institutional Environment and Performance Survey, Collection system Manual (EDI) Bogotá.

_____. Institutional Environment and Performance Survey, Novelties and reports Manual (EDI) Bogotá.

Methodologies

National Administrative Department of Statistics (DANE), Institutional Environment and Performance Survey Thematic Design (EDI) Bogotá.

_____. Institutional Environment and Performance Survey IT Design (EDI). Bogotá.

_____. Institutional Environment and Performance Survey Statistical Design (EDI) Bogotá.

_____. Institutional Environment and Performance Survey Methodology Datasheet (EDI) Bogotá.

_____. Institutional Environment and Performance Survey Estimation specifications (EDI). Bogotá.

[22] The documentation is available from the National Data Catalog (ANDA). http://formularios.dane.gov.co/Anda41/index.php/catalog/275/relatedmaterials

_____. Institutional Environment and Performance Survey Sample design (EDI). Bogotá.

Others

National Administrative Department of Statistics (DANE). Institutional Environment and Performance Survey, Questionnaire (EDI). Bogotá.

_____. Institutional Environment and Performance Survey Glossary of Terms (EDI). Bogotá.

GLOSSARY

Actions of accountability to the citizens. In political and state structure terms, accountability is the set of structures (set of legal regulations and institutions responsible to report, explain and receive rewards or sanctions for their actions), practices (specific actions taken by the institutions, public officials, civil society and the general citizenry) and results (products and consequences generated from practices) whereby, state organizations and public officials report, explain and receive rewards or sanctions for their actions to other public institutions, international organizations, citizens and civil society who have the right to receive information and explanations as well as the power to impose penalties or rewards, at least symbolic (Schedler 2004; Grant and Keohane 2005)[23.]

Annual Plan of Action. It refers to the annual programming of the activities, projects and resources that shall be developed by each division of the entity in the term and coordinated with the Strategic Sectorial Plan and the Strategic Institutional Plan[24].

Citizen oversight. Democratic representation mechanism that allows citizens or the different community organizations to exercise surveillance over public administration, with respect to the administrative, political, judicial, electoral, legislative authorities, and the control bodies as well as of institutions public or private, non-governmental organizations, whether domestic or international operating in the country, responsible for the execution of a program, project, contract or for the provision of a public service[25.]

Citizen participation. Exercise of the right to elect and be elected, the right to express opinions, to participate in plebiscites, referendums and public

[23] CONPES 3654 of 2010. Policy of accountability of the executive branch to the citizens.

[24] Presidency of the Republic. Methodology for the implementation of the Integrated Planning and Management Model. Colombia. 2012. p. 67.

[25] Law 850 of 2003 whereby citizen oversight is regulated.

consultations, form political parties and movements, the possibility of revoking mandates, legislative initiative and open council, etc.26.

Control bodies. It refers to those bodies to which the Political Constitution entrusts the functions related to discipline control, Ombudsman Control (defend the people) and fiscal control. The basic objectives and scope of these activities are specifically defined by law and by the Constitution for each of these bodies: the Attorney General's Office, the Comptroller General's Office, the Auditor General's Office, and the Ombudsman's Office[27].

Economic groups. Local institutions that take part by doing business in different markets under common administrative or financial control, whose members are bound by trust, and interpersonal relations based on a similar personal, ethnic or commercial background[28].

External policies. Orders that come from institutions of higher rank, especially the head of the sector to which the entity belongs[29].

Gender identity. A set of practices, meanings and self-representations that are built by the individuals in relation to themselves, their sexual activities and erotic-emotional preferences within social and cultural framework[30].

Government of Colombia. In accordance with the principle of separation of powers, it is composed as follows:

- Executive branch. The executive branch represents the government and is composed of the governorships, mayors' offices, superintendents' offices, public institutions and the state-owned industrial or commercial enterprises[31].

[26] http://www.procuraduria.gov.co/html/sitio guia/docs/Cartilla Guia participacion.pdf

[27] National Planning Department - Higher School of Public Administration. Guidelines for territorial governance No. 1. Basics of the Colombian State. 2011. p. 230. Political Constitution of 1991. Article 117. Attorney General's office and Comptroller General's office are control bodies.

[28] Management of economic groups Seminar; Department of Economics, Universidad Nacional de Colombia.

[29] DANE, thematic team elaboration.

[30] Adapted from Amnesty International.http://www.amnesty.org/es/sexual-orientation-and-gender-identity

- Judicial Branch. It is composed by the Constitutional Court, the Supreme Court of Justice, the State Council, the Supreme Council of the Judiciary, the Attorney General's Office, the Courts and Judges, who are responsible for the administration of justice to give effect to the rights, obligations, guarantees and freedoms enshrined in the Constitution and laws[32].

- Legislative branch. It is represented by the Congress to which corresponds amending the Constitution, making laws and exercising political control over the government and administration. The Congress consists of the Senate and House of Representatives[33].

Hierarchy levels. The classification of these levels is provided below:

- Administrative Level. It includes jobs whose duties involve the carrying out of support and complementary activities to the tasks of the upper levels or tasks that are characterized by the predominance of manual activities or simple execution tasks. Such as document management, operation of machinery, equipment, vehicles, general services, etc.)[34].

- Consultant level. Public officials whose functions are aimed at providing assistance, and directly advising public officials at the management level[35].

- Management Level. Public officials with general direction, institutional policy formulation and the adoption of plans, programs and projects managerial functions[36].

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[31] Political Constitution of Colombia. Article 115. Law 489 of 1998. Article 38.
[32] Political Constitution of Colombia. Article 116. Article 105 of Law 270 of 1996 National Planning Department. Guidelines for territorial governance No. 1. Basics of the Colombian State. 2011. p. 94-195.
[33] Political Constitution of Colombia. Article 114. National Planning Department - Guidelines for territorial governance No. 1. Basics of the Colombian State. 2011. p. 58-59.
[34] Taken from Decree 2489 of 2006, and Decree 785 of 2005 Administrative Department of Public Service.
[35] Taken from Decree 2489 of 2006 and Decree 785 of 2005
[36] Decree 1569 of 1998 (August 5). Repealed by Article 34, National Decree 785 of 2005 whereby the nomenclature and classification system of jobs of the territorial entities that should be regulated by the provisions of Law 443 of 1998, and other provisions are made.

- Professional Level. It groups the jobs whose nature demands the implementation and application of knowledge specific to any professional career recognized by law[37].
- Technical Level. It includes the jobs whose duties require the development of processes and procedures in objectives-related technical work and support as well as those related to the application of science and technology[38].

Institutional Environment. Aptitude of the entity to follow rules, implement policies and manage resources[39].

Institutional Goals. They are those established by the entity or division on institutional plans aimed at fulfilling the strategic planning of the entity for the achievement of the state's purposes led by the respective entity[40].

Institutional Performance. Capacity of a public entity to undertake processes for the generation of results, accountability and fostering of the labor welfare[41].

Internal guidelines. Standards and guidelines established by each entity and that govern its conduct in matters of an internal nature[42].

Irregular practice. Conduct in which the official incurs when he/she abuses the position that he/she holds, in order to obtain personal and / or group gain[43].

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[37] Ibid footnote 29.

[38] Ibid footnote 29.

[39] Adapted from "Public Officials and Their Institutional Environment: An Analytical Model for Assessing the Impact of Institutional Change on Public Sector Performance". Policy Research Working Paper no. 2427. World Bank. Washington D.C., 2000. Numeral 2.1. p. 3-4.

[40] National Civil Service Commission Agreement 137 of 2010.

[41] Adapted from "Public Officials and Their Institutional Environment: An Analytical Model for Assessing the Impact of Institutional Change on Public Sector Performance". Policy Research Working Paper no. 2427. World Bank. Washington D.C., 2000. p. 10.

[42] DANE, thematic team elaboration,

[43] Adapted from the definition of corruption proposed in Huntington S. (1972). El orden político en las sociedades en cambio (*The political order in changing societies*). Buenos Aires. Paidós. p.172.

Job stability. The certainty that the entity offers to the official with respect to his/her continuance in the position or in the entity[44].

Labor welfare. Satisfaction of the public official in terms of his/her compensation and the social acknowledgement of their work[45].

Members of popular-election public corporations. They are elected by direct popular vote, and can be removed by a loss of investiture procedure, or simply because the period for which they were elected reaches its end[46].

Merits. Attributes pertaining to the training and competence of the persons as the sole motivation for the selection of government officials for the desired position[47].

Official's profile. Characteristics of the employee required to perform their functions, such as studies accomplished and experience relevant to the position[48].

Official worker. The engagement of these employees is made by means of labor contracts, which may be terminated in accordance with the performance shown by the worker[49].

On-line Government. Strategy aimed at the construction of a more efficient, more transparent and participatory state, and which provides better services to citizens and enterprises, through the use of Information and Communication Technologies[50].

Open Government Index. It is a synthetic indicator developed by the Attorney General's Office in order to measure compliance with anti-corruption strategic standards[51].

Perception. It can refer to a specific item of knowledge, an idea or a feeling inside that results from an impression of reality or the world that surrounds us[52].

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[44] LABOR STATUTE whereby Article 53 of the Political Constitution is developed and other provisions are made.

[45] Adapted from "Public Officials and Their Institutional Environment: An Analytical Model for Assessing the Impact of Institutional Change on Public Sector Performance". Policy Research Working Paper no. 2427. World Bank. Washington D.C., 2000 p. 10.

[46] Substantive Labor Code; Article 4.

[47] Law 909 of 2004.

[48] Adapted from the competences profile concept defined in Law 909 of 2004.

[49] Decree 1848 of 1969; Chapter 1, Articles 1 and 3 of the Ministry of Labor and Social Security

[50] Decree 1151 of 2008. Ministry of Communications.

[51] Attorney General's Office. Open Government Index 2013.

Performance evaluation. It is a management tool that enables it to integrate the performance of the public official within the institutional mission and its social function in order to generate added value to the entities through the effective performance of labor and behavioral commitments. Created in order to provide information, based on evidence showing the competences of the official, with the purpose of guiding the decision-making related to the length of service and the individual and institutional improvement actions[53].

Process of accountability to citizens. Set of rules, procedures, methodologies, structures, practices and results by means of which the entities and public officials inform, explain and publicize the results of their management to the citizens[54].

Public employee. Natural person who provides personal services, which are compensated, with legal and regulatory contracting in the agencies and entities of the public administration and which compose the civil service. In the performance of their duties and fulfillment of their respective roles, the civil service will ensure the addressing and satisfaction of the general interests of the community[55].

Public official Public officials are the persons who provide services to the state or the public administration. The term public official has been used since the Constitution of 1991, which states that they are employees of the State and the community. There are three types of public officials, public employees, official workers and members of popular-elected public corporations[56].

Public officials of free appointment and removal. They are appointed by a person of higher hierarchy into the position to which they aspire; they are removed when their immediate supervisor, i.e. the same who appointed them, asks for their resignation.

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[52] DANE, thematic team elaboration RAE (Spanish Royal Academy).

[53] National Civil Service Commission (CNSC for its Spanish acronym) Resolution 2591 of 2010. Manual of inspection, surveillance and control on the labor performance of tenured public officials and under probationary period. CNSC. 2010. Agreement 137 of 2010.

[54] CONPES 3654 of 2010. Accountability process of the Executive Branch to the citizens.

[55] Law 909 of 2004

[56] Political Constitution of 1991. Article 123.

Public officials should meet certain requirements in order to access office, since they are subject to a "regime of impediments" (it refers to those occurring when the person cannot take office due to personal faults and not of the position); they are also subject to a "regime of incompatibilities", (they are inherent to the position when it requires certain conditions that the person cannot meet [e.g. kinship of blood, marriage or civil relationship with other government members, etc.])[57].

Public hearing. Accountability mechanism in order for citizens to learn about management and administration of public resources in the formulation, implementation and evaluation of policies for the fulfillment of the mission of the entity. They are summoned by the public entities in order to discuss issues related to the formulation, implementation and evaluation of policies and programs for which the entity is responsible, and especially when the collective rights or interests are impacted (Article 33 of Law 489 of 1998). They are coordinated by the DAFP in order for the public entities to deliver information pertaining to their management to citizens and the latter are able to interact, ask for explanations and to provide feedback[58].

Quality Certification. A quality accreditation process of an entity's products or services, which is performed by a certification body of quality management systems accredited under a regulation[59].

Quality management system. A tool for systematic and transparent management that allows it to direct and evaluate institutional performance in terms of quality and social satisfaction in the delivery of services that are the responsibility of the entities.[60].

[57] Attorney General's Office concept.
http://www.procuraduria.gov.co/relatoria/media/file/dependencia/SalaDisciplinaria/2012/1614 946.doc
[58] CONPES 3654 of 2010
[59] ICONTEC Article 7 Law 872 of 2003. Article 1 Decree 2375 of 2006.
[60] Law 872 of 2003. Whereby the quality management system is created in the executive branch of government and other entities providing services.

Results-based management. Implementation of management tools for the fulfillment of the entity's objectives and strategies[61].

Results of public policies. Impact of management in terms of improving the living standards of the population targeted by the policies. It includes aspects such as distributive justice, citizen participation, respect for human dignity, due process and transparency through the implementation of policies[62].

Results of resource management. The impact of the management of the institution in terms of the administration of institutional, human, budgetary, physical and technological resources. It includes aspects such as technical and economic efficiency, effectiveness and equity in the development of the entity's activities[63].

Sexual orientation. The ability of every person to feel a profound emotional, affective and sexual attraction to persons of their same gender or of a gender different from theirs, as well as the ability to maintain intimate and sexual relations with these persons[64].

Social status. It is the position or rank of a person or group, within the society. The expression used to denote the condition, power, income and social rank of a person. Sociologists use it to indicate the political or social position, generally referring to those belonging to high-income classes. It is usually said that the possession of a given good, a lifestyle, the enjoyment of certain perks, the obtainment of privileges and honors or a given usage confer status.

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[61] Adapted from "Public Officials and Their Institutional Environment: An Analytical Model for Assessing the Impact of Institutional Change on Public Sector Performance". Policy Research Working Paper no. 2427. World Bank. Washington D.C., 2000. p. 9.

[62] Adapted from the definition of evaluation of public policies in Duran, P. Pensar la Acción Pública (think of the public action) Paris. LGDJ. 1999. P. 169 -170.
The formulation and implementation of public policies in ALC Lucy Winchester/ILPES International course.

[63]DANE thematic team elaboration.

[64] Adapted from Amnesty International. http://www.amnesty.org/es/sexual-orientation-and-gender-identity

In the framework of the study, the public official situation is assumed as a source of social status.[65]

Strategic actions. They consist of the most important plans and / or products that the entity expects to deliver during the year, aimed at fulfilling its objectives[66].

Streamlining of administrative procedures. It refers to the implementation of effective strategies for simplification, automation and the optimization of processes and procedures to ensure that administrative procedures are simple, efficient, direct and timely to bring the state to the citizen, through the following: Automation of processes, reduction of operating costs in the entity, reduction of costs for users, reduction of documents, reduction of steps, reduction of steps in internal processing steps, reduction of requirements, reduction of the duration of the procedure, reduction of the time at the assistance point, increase of the validity of the procedure, increase of assistance points, and fusion of the procedure[67].

Tenured Public Officials. They access by means of an exam for public service; i.e. They compete with others for the position, and can be removed for unsatisfactory work, for violating disciplinary rules or simply because the contract comes to an end[68].

[65] Borja, Rodrigo. Enciclopedia de la política (encyclopedia of politics). Fondo de cultura económica. 3rd edition. 2003. p. 1319.

[66] Proposal. National Center of Strategic Planning. Perú.

[67] Secretary of Transparency. Presidency of the Republic. (2012). Strategies for the construction of the Anti-Corruption Plan and service to the Citizens.

[68] Law 909 of 2004, whereby rules are issued that regulate the public employment, the administrative career, the public management and other provisions are made; Administrative Department of the Public Service; Bogota, July 2013.

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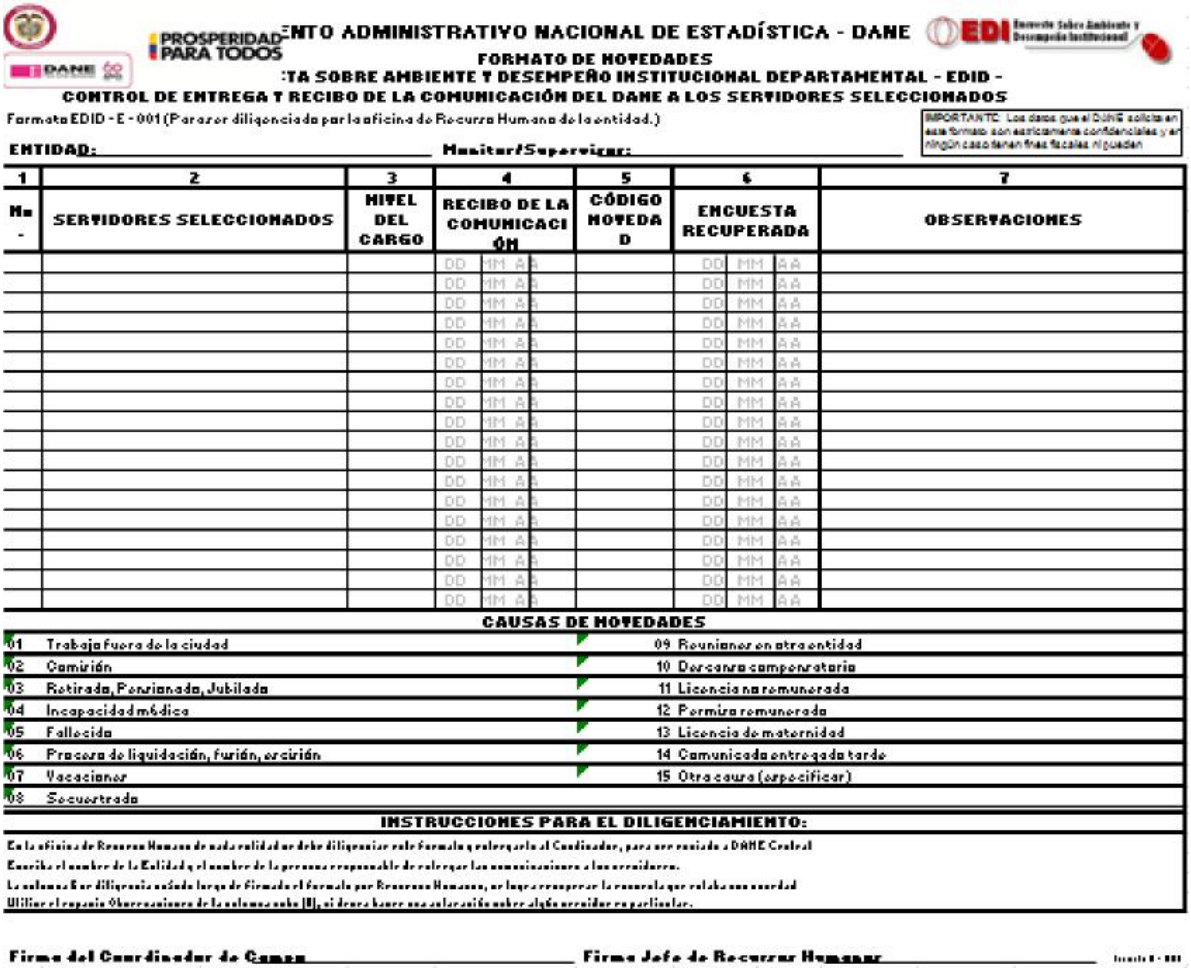
APPENDICES

Appendix A. Record of Changes in the Design form

DANE	CAMBIOS EN EL DISEÑO					CÓDIGO: DSO - PLD - 01 - R03 Fecha: 05 - Agosto - 2012 Página: 1 de 1	
Fecha del cambio	Modificación realizada al diseño	Justificación del cambio	Documentos que cambiaron	Cargos a entrenar	Elaborado por	Revisado por	Aprobado por

Source: DANE

Appendix B. Novelties Form



ENTO ADMINISTRATIVO NACIONAL DE ESTADÍSTICA - DANE

PROSPERIDAD PARA TODOS

EDI

FORMATO DE NOVEDADES

TA SOBRE AMBIENTE Y DESEMPEÑO INSTITUCIONAL DEPARTAMENTAL - EDID -

CONTROL DE ENTREGA Y RECIBO DE LA COMUNICACIÓN DEL DANE A LOS SERVIDORES SELECCIONADOS

Formato EDID - E - 001 (Para ser diligenciado por la oficina de Recurso Humano de la entidad.)

IMPORTANTE: Los datos que el DANE solicita en este formato son estrictamente confidenciales y en ningún caso tienen fines fiscales ni pueden

ENTIDAD: Monitor/Supervisor:

1	2	3	4	5	6	7
No.	SERVIDORES SELECCIONADOS	NIVEL DEL CARGO	RECIBO DE LA COMUNICACIÓN	CÓDIGO NOVEDAD	ENCUESTA RECUPERADA	OBSERVACIONES
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	
			DD MM AA		DD MM AA	

CAUSAS DE NOVEDADES

01	Trabaja fuera de la ciudad	09	Reunirse en otra entidad
02	Comisión	10	Descanso compensatorio
03	Retirado, Pensionado, Jubilado	11	Licencia no remunerada
04	Incapacidad médica	12	Permiso remunerado
05	Fallecido	13	Licencia de maternidad
06	Proceso de liquidación, furián, orcisión	14	Comunicado entregado tarde
07	Vacaciones	15	Otra causa (especificar)
08	Secuestrado		

INSTRUCCIONES PARA EL DILIGENCIAMIENTO:

En la oficina de Recurso Humano de cada entidad se debe diligenciar este formato y entregarlo al Coordinador, para ser enviado a DANE Central

Escriba el nombre de la Entidad y el nombre de la persona responsable de entregar las comunicaciones a los servidores.

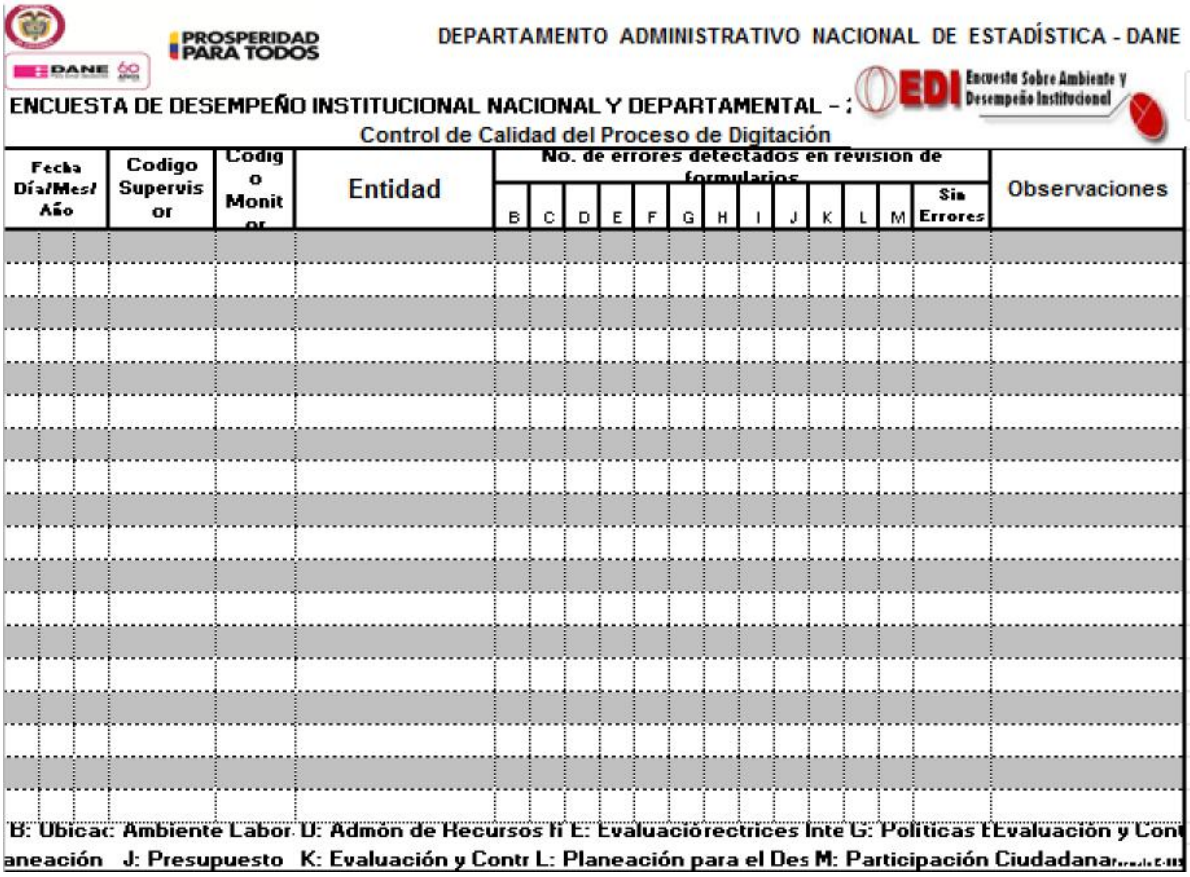
La columna 5 se diligencia cuando luego de firmado el formato por Recurso Humano, se logra recuperar la encuesta que estaba en novedad

Utilice el espacio Observaciones de la columna seis (6), si desea hacer una aclaración sobre algún servidor en particular.

Firma del Coordinador de Campo Firma Jefe de Recurso Humano

Source: DANE

Appendix C. Data entry quality control form



PROSPERIDAD PARA TODOS

DEPARTAMENTO ADMINISTRATIVO NACIONAL DE ESTADÍSTICA - DANE

ENCUESTA DE DESEMPEÑO INSTITUCIONAL NACIONAL Y DEPARTAMENTAL – 2

EDI Encuesta Sobre Ambiente y Desempeño Institucional

Control de Calidad del Proceso de Digitación

Fecha Día/Mes/ Año	Codigo Supervisor	Codigo Monitor	Entidad	No. de errores detectados en revisión de formularios												Observaciones
				B	C	D	E	F	G	H	I	J	K	L	M	Sin Errores	

B: Ubicac Ambiente Labor U: Admón de Recursos fi E: Evaluaciórectrices Inte G: Políticas E Evaluación y Cont
aneación J: Presupuesto K: Evaluación y Contr L: Planeación para el Des M: Participación Ciudadana

Source: DANE

Appendix D. Attendance form

DEPARTAMENTO ADMINISTRATIVO NACIONAL DE ESTADISTICA - DANE -
PROSPERIDAD PARA TODOS
ENCUESTA DE AMBIENTE Y DESEMPEÑO INSTITUCIONAL DEPARTAMENTAL - EDID -
FORMATO DE CONTROL COBERTURA
EDI Encuesta Sobre Ambiente y Desempeño Institucional

Entidad: _____

Código de Departamento ☐☐

No.	Estado	Código del funcionari	Nombre del Funcionario	Nivel	Diligencia		MÉTODO DE RECOLECCIÓN	Observaciones
					FECHA	HORA		
	1							

Estado 0 = Sin diligenciar 1 = Completa 3 = Incompleta

Source: DANE

Appendix E. Correction of data entry errors form

DEPARTAMENTO ADMINISTRATIVO NACIONAL DE ESTADISTICA - DANE -
ENCUESTA SOBRE AMBIENTE Y DESEMPEÑO INSTITUCIONAL NACIONAL-EDI -
FORMATO DE CORRECCIÓN DE ERRORES DE DIGITACIÓN

DANE
Para tomar decisiones

EDI Encuesta Sobre Ambiente y Desempeño Institucional

Código de Departamento: ☐ ☐

No.	Código del funcionario	USUARIO	CLAVE	CAPITULO No	PREGUNTA No	RESPUESTA DIGITADA	RESPUESTA CORRECT	OBSERVACIONES

Código del Funcionario: Corresponde al cógido que genera en el estado de mi operativo.

Source: DANE

Appendix F. Institutional Environment Indicator Variables 2010-2014

Institutional Environment Indicator Variables				
2010	**2011**	**2012**	**2013**	**2014**
C5A	C5A	C5A	C01A	C01A
C5B	C5B	-	-	-
C5C	C5C	C5B	C01B	C01B
C5D	C5D	C5C	C01C	C01C
C6A	C6A	C6A	C02A	C02A
C6B	C6B	-	-	-
C6C	C6C	C6B	C02B	C02B
C6D	C6D	C6C	C02C	C02C
C6E	-	-	-	-
C6F	-	-	-	-
C7A	C7A	C7A	C03A	C03A
C7B	C7B	-	-	-
C7C	C7C	C7B	C03B	C03B
C7D	C7D	C7C	C03C	C03C
C7E	C7E	-	-	-
C7F	C7F	C7D	C03D	C03D
C7G	C7G	C7E	C03E	C03E
-	-	-	-	C03F
C8A	C8A	C8A	C04A	C04A
C8B	C8B	C8B	C04B	C04B
C8C	C8C	C8C	C04C	C04C
C8D	C8D	C8D	C04D	C04D
C8E	C8E	C8E	C04E	C04E
C8F	C8F	C8F	C04F	C04F
C8G	C8G	C8G	C04G	C04G
C8H	C8H	C8H	C04H	C04H
-	-	-	-	C04I
C9A	C9A	-	-	-
C9B	C9B	C9A	C05A	C05A
-	C9C	C9B	C05B	C05B
C9C	C9D	C9C	C05C	C05C
C9D	-	-	-	-
C9E	-	-	-	-
C10A	C10A	C9D	C05D	C05D
C10B	C10B	C9E	C05E	C05E

Institutional Environment Indicator Variables				
2010	2011	2012	2013	2014
C10C	C10C	-	-	-
C10D	-	-	-	-
C10E	-	-	-	-
C11A	C11A	C10A	C06A	C06A
C11B	C11B	C10B	C06B	C06B
C11C	C11C	C10C	C06C	C06C
C12A	C12A	C11A	C07A	C07A
C12B	C12B	C11B	C07B	C07B
-	C12C	C11C	C07C	C07C
C13A	C13A	C12A	C08A	C08A
C13B	C13B	-	-	-
-	C13C	C12B	C08B	C08B
D14A	D14A	D13A	D01A	D01A
D14B	D14B	D13B	D01B	D01B
D14C	D14C	D13C	D01C	D01C
-	-	-	D01D	D01D
D15A	D15A	D14A	D02A	D02A
-	D15B	D14B	D02B	D02B
E18A	-	-	-	-
E18B	-	-	-	-
E18C	-	-	-	-
E20A	-	-	-	-
E20B	-	-	-	-
E20C	-	-	-	-
E20D	-	-	-	-
E20E	-	-	-	-
-	-	-	E01A	E01A
F26A	F27A	F25A	F01A	F01A
F26B	F27B	F25B	F01B	F01B
F26C	F27C	F25C	F01C	F01C
F26D	F27D	F25D	F01D	F01D
F26E	F27E	F25E	F01E	F01E
F26F	F27F	F25F	-	-
F26G	F27G	F25G	-	-
G29A	-	-	-	-
G29B	-	-	-	-
G29C	-	-	-	-
G29D	-	-	-	-
G29E	-	-	-	-
G29F	-	-	-	-

Institutional Environment Indicator Variables				
2010	2011	2012	2013	2014
G29G	-	-	-	-
G29H	-	-	-	-
H30A	-	-	-	-
H30B	-	-	-	-
H30C	-	-	-	-
H34A	H36A	H35A	H07A	H06A
H34B	H36B	H35B	H07B	H06B
-	H36C	H35C	H07C	H06C
H34C	H36D	-	-	-
H34D	H36E	H35D	H07D	H06D
H34E	-	-	-	-
H34F	-	-	-	-
H34G	-	-	-	-
-	-	-	-	H06E
H35A	H37A	H36A	H08A	H07A
H35B	H37B	H36B	H08B	H07B
H35C	H37C	H36C	H08C	H07C
H35D	H37D	H36D	H08D	H07D
H35E	H37E	H36E	H08E	H07E
-	H37E	H36E	H08F	H07F
I37A	I39A	I38A	I01A	I01A
I37B	I39B	I38B	I01B	I01B
I37C	I39C	I38C	I01C	I01C
I37D	I39D	I38D	-	-
I37E	I39E	I38E	-	-
I37F	I39F	I38F	-	-
I37G	-	-	-	-
I37H	-	-	-	-
I37I	-	-	-	-
I38A	I40A	I39A	-	-
I38B	I40B	I39B	-	-
I38C	I40C	I39C	-	-
I38D	I40D	I39D	I02A	I02A
I38E	-	-	-	-
J39A	J41A	J40A	J01A	J01A
J39B	J41B	J40B	J01B	J01B
J39C	J41C	J40C	J01C	J01C

Source: DANE. EDI Thematic expert.

Appendix G. Institutional Performance Indicator Variables 2010-2014

Institutional Performance Indicator Variables				
2010	**2011**	**2012**	**2013**	**2014**
C11D	C11D	C10D	C06D	C06D
C11E	C11E	C10E	C06E	C06E
C11F	C11F	C10F	C06F	C06F
C11G	C11G	C10G	C06G	C06G
C11H	C11H	C10H	C06G	C06G
C12C	-	-	-	-
C12D	C12D	C11D	C07D	C07D
C12E	C12E	C11E	C07E	C07E
C12F	C12F	C11F	C07F	C07F
C12G	C12G	C11G	C07G	C07G
C12H	C12H	C11H	C07G	C07G
C13C	-	-	-	-
D15B	-	-	-	-
D15C	D15C	D14C	D02C	D02C
D15D	D15D	D14D	D02D	D02D
D15E	D15E	D14E	D02E	D02E
D15F	D15F	D14F	D02F	D02F
D15G	D15G	D14G	D02F	D02F
D15H	D15H	D14H	D02G	D02G
E19A	E19A	E18A	-	-
E19B	E19B	-	-	-
E19C	E19C	E18B	E01B	E01B
E19D	E19D	E18C	E01C	E01C
E19E	-	-	-	-
E21A	E22A	E21A	-	-
E21B	E22B	E21B	-	-
E21C	E22C	E21C	-	-
E21D	E22D	E21D	-	-
E22A	E23A	E22A	E04A	E04A
E22B	E23B	E22B	-	-
E22C	E23C	E22C	E04B	E04B
E22D	E23D	E22D	E04C	E04C
E22E	E23E	E22E	E04D	E04D
E22F	E23F	-	-	E04J

Institutional Performance Indicator Variables				
2010	**2011**	**2012**	**2013**	**2014**
E22G	E23G	E22F	E04E	E04E
E22H	E23H	E22G	E04F	E04F
E22I	-	-	-	-
-	-	-	-	E04G
-	-	-	-	E04H
-	-	-	-	E04I
E23A	E24A	E23A	E05A	-
E23B	E24B	E23B	-	-
E23C	E24C	E23C	E05B	-
E23D	E24D	E23D	E05C	-
E23E	E24E	E23E	E05D	-
E23F	E24F	E23F	E05E	-
		E23G	E05F	-
E23G	E24G	E23H	E05G	-
E23H	E24H	E23I	E05H	-
E24A	E25A	-	-	-
E24B	E25B	-	-	-
E24C	E25C	-	-	-
E24D	E25D	-	-	-
E24E	E25E	-	-	-
E25A	E26A	E24A	E08A	E07A
E25B	E26B	E24B	E08B	E07B
E25C	E26C	E24C	E08C	E07C
E25D	E26D	E24D	E08D	E07D
E25E	E26E	E24E	E08E	E07E
E25F	E26F	E24F	E08F	E07F
-	G30A	G28A	G03A	G03A
-	G30B	G28B	G03B	G03B
-	G30C	-	-	-
-	G30D	G28C	G03C	G03C
-	G30E	G28D	G03D	G03D
-	G30F	G28E	G03E	G03E
-	G30G	G28F	G03F	G03F
-	G30H	G28G	G03G	G03G
-	-	-	G03H	G03H
-	-	-	-	G03I
H33A	H35A	H34A	H06A	H05A
H33B	H35B	H34B	H06B	H05B
H33C	H35C	H34C	H06C	H05C
H33D	H35D	H34D	H06D	H05D

Institutional Performance Indicator Variables				
2010	2011	2012	2013	2014
H33E	H35E	H34E	H06E	H05E
H33F	H35F	H34F	H06E	H05E
H33G	H35G	H34G	H06A	H05A
H33H	H35H	H34H	H06F	H05F
H33I	H35I	H34I	H06G	H05G
H33J	H35J	H34J	H06H	H05H
H36A	H38A	H37A	H09A	H08A
-	-	-	-	-
H36B	H38B	H37B	H09A	H08A
-	-	-	-	-
H36C	H38C	H37C	H09B	H08B
H36D	H38D	H37D	H09C	H08C
H36E	H38E	H37E	H09D	H08D
H36F	H38F	H37F	H09B	H08B
-	H38G	H37G	H09E	H08E
-	H38H	H37H	H09F	H08F
-	-	No	H09G	H08G
-	-	-	I01D	I01D
-	-	-	I01E	I01E
-	-	-	I01F	I01F
-	-	-	-	I01G
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
I38A	I40A	I39A	I02C	I02C
I38B	I40B	I39B	-	-
I38C	I40C	I39C	-	-
I38D	I40D	I39D	-	-
I38E	-	-	I02B	I02B
J40A	J42A	J41A	J02A	J02A
J40B	J42B	J41B	J02B	J02B
J40C	J42C	J41C	J02C	J02C
J40D	J42D	J41D	J02D	J02D
J40E	J42E	J41E	J02E	J02E

Source: DANE. EDI thematic expert.