National Administrative Department of Statistics

DANE

Direction of Methodology and Statistical Production

DIMPE

General Methodology
Quarterly Services Survey
2012

NATIONAL ADMINISTRATIVE DEPARTAMENT OF STATISTICS

Bogotá, D.C., 2012

Direction of Methodology and Statistical Production – DIMPE

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PRESENTATION

The National Administrative Department of Statistics (DANE for its acronym in Spanish), as coordinating entity of the National Statistical System (SEN for its acronym in Spanish), and within the framework of the “Statistical Planning and Harmonization” project,, works towards the strengthening and consolidation of the SEN through several processes, such as: The production of strategic statistics; the generation, adaptation, adoption and dissemination of standards; the consolidation and harmonization of statistical information; and the connection of instruments, stakeholders, initiatives and products. These actions are intended to improve the quality of the strategic statistical information, its availability, timeliness and accessibility, to respond to the high demand for statistical information.

In this context and being aware of the need and obligation to provide better products for its users, DANE developed standard guidelines for the presentation of methodologies that contribute to the visualization and understanding of the statistical process. By means of this instrument, the institution prepared methodological documents on its operations and statistical research, which are made available to specialized users and the general public. These documents present the main technical characteristics involved in the processes and sub-processes of each research, in a standard, easy-to-read and comprehensive manner, thus enabling further analysis, control, replication and statistical assessment.

These series of documents promote transparency, trust and credibility in the institution’s technical expertise, for a better understanding, comprehension and use of the statistical information that is produced, in accordance with the principles of consistency, comparability, completeness and quality of the information.

INTRODUCTION

For several decades the services sector has presented an increasing participation in the national economy, and has grown to become one of its most dynamic sectors given its importance as provider of essential inputs in the production of most goods. This is the result of the externalization of services inside the manufacturing industry, the rise of financial products and the greater coverage of universal services in education and health. For this reason, statistical information on the services sector has gained importance and complements the industry and commerce figures, since these data are used to follow-uo on the evolution of the national economy in the short run, as well as to compile the services data in quarterly national accounts.

Additionally, as from the globalization process and within the framework of negotiations of commercial agreements on international trade of services, the need for information to illustrate the sector's evolution and to assess the impact of these processes has been identified. In addition, it is also important for the implementation of a national policy on competitiveness and productivity oriented to such service sectors identified as being of world-class.

DANE, in accordance with its mission plan, has implemented projects to obtain the information on sectors that have not yet been researched, and thus, there is a lack of data to procure their analysis and contextualization in the country's economic sector.

Although DANE has covered the services sector through the Service Annual Survey (SAS), there is no circumstantial information with national coverage available. The Quarterly Services Survey (QSS) that began in the first quarter of 2007 is a study that complements the information of the SAS and that of other sectors of the economy. The construction of indicators on the services sector enables the different economic groups or segments to establish the real dimension of these activities, and to promote the adoption of policies for the benefit of this sector.

In view of the above and taking into account the problems related to insufficiency, dispersion and reduced standardization of the services statistics in the country, this project pretends to make up for these deficiencies by means of improvements in the availability and quality of the country's statistics on services in the short run. The current investigation is addressed to companies residing in the national territory engaged in market services activities and that are within certain inclusion limits according to the number of employed persons and annual income earned, which generate a mandatory inclusion sample.

This document is divided into six chapters. The first one describes the background of the research; the second one presents the design stage; the third one refers to statistical production; the fourth refers to the analysis and discussion of results; the fifth describes the dissemination of results of the statistical operation; and finally, the sixth provides details on the related documentation.

1. BACKGROUND

Since the year 1995 DANE produces structural information on nine services sector activities through the SAS. DANE also measures the Gross Domestic Product (GDP) of the Services sector. However, neither of these two studies can provide a situational analysis or information on the country's production.

In this context, the project to agree on and coordinate institutional efforts for the design and implementation of investigations emerged. Thus, situational statistics for the services sector, as well as the standardization of structural statistics were obtained, which could serve as a valuable input for the development and implementation of a situational and structural statistics system, according to the needs of different entities and users of the services sector. This project includes the participation of the following entities: The National Department of Planning (DNP for its acronym in Spanish); the Ministry of Commerce, Industry, and Tourism (MCIT); the Banco de la República (Central Bank of Colombia) and DANE.

The QSS has provided information since 2007 and started with the implementation of a pilot test between August and October of 2006. This test was applied to 3166 sources and aimed to evaluate the design of data collection instruments, test the information system developed for the investigation and make adjustments to the operational scheme for they to work efficiently. Based on the results, it was concluded that the original questionnaire was too long for a measurement of a circumstantial or contingent nature and the need for a more refined framework for a quarterly measurement was established. It was also determined that individuals should be excluded from the QSS, given that they present a high number of novelties and a low-response rates.

In general terms it was established that the simplification of the questionnaire and of the application, the filtering of the directory (excluding individuals), as well as a detailed conceptual specification in the manuals and the review of the implementation of fines to reluctant sources, could favor the streamlining of the operation ensuring the correct scheduling times and resources for data collection purposes.

During the first and second quarter of 2009 and the first quarter of 2011 more companies were added, in order to improve the information coverage on the services sector; their splice methodology is also described further in this document. Moreover, developments in the investigation have led to some modifications regarding thematic coverage and disaggregation of results by sub-sectors. In the first place, special studies have been carried out for the hotels and travel agencies sub-sectors given that they were excluded from the present research. Secondly, a more extensive disaggregation of results was performed considering the greater coverage, and thus currently there is information available on thirteen services sub-sectors, i.e., seven more than in the previous study.

2. DESIGN

2.1 CONCEPTUAL FRAMEWORK

2.1.1 Objectives

General Objective
To learn about the economic behavior of the following activities through the generation of indices and variations in income and in occupied personnel, for the national total and in the short term: sale of prepared foods at point of sale, bars and similar establishments storage and telecommunications; real estate renting and business activities; private higher education; private healthcare; and entertainment activities, and other services[1].

Specific objectives

* To measure the behavior of income and its principal components for the services activities under study.
* To quantify the evolution of occupied personnel in the services activities under study, according to the different occupational categories.
* To generate basics statistics for the calculation of the quarterly GDP.

2.1.2 Reference framework

Conceptual Basis

Services are a group of activities developed by economic units, aimed at generating and making available to individuals, households and firms a wide range of possibilities every time they are demanded, and over which no ownership rights fall upon the user. The Quarterly Services Survey seeks to contribute to the economic knowledge of the agents in the services sector from the production of services and the labor force demand points of view.

Services are activities characterized by their great heterogeneity and some sub-sectors operate at different scale levels. Thus, there may be large, medium and small companies developing the same activity, as in the case of the restaurants and healthcare industry. In sectors such as telecommunications large enterprises are more predominant, due to the presence of scale economies in the sector.

It is worth mentioning that this research studies the economic behavior of services in the short-run, and takes the basic concepts used in the services sector, and specifically those in the Services Annual Survey (SAS). These concepts delimit the contents of the study carried out in the investigation on a quarterly basis.
Since services are heterogeneous products generated every time they are requested and over which no ownership rights fall upon the user, nor they can be traded separately from

[1] *This category includes services such as washing and cleaning of fabric and fur garments, even dry cleaning; hairdressing and other beauty treatments; death services and related activities and other services that were not previously classified (ISIC Rev.3 A.C).*

their production and cannot be transported or stored, what is sold is the right to use a service whenever it is required.

In regard to the structure of some of the services companies under study, it is necessary to consider the combination of activities, such as: Hotels with restaurants and bars, restaurants with rooms, restaurants and coffee shops; coffee shops with bars; and travel agencies with hotels. In addition, other services or sale of goods different from the sector, such as supermarkets with restaurants, bakery industries with coffee shops, among others, are often overlapped. However, the research refers to the services activities described in the International Standard Industrial Classification of All Economic Activities Rev. 3, Adapted for Colombia (ISIC Rev. 3 A.C.)

Following the recommendations of the United Nations (UN) Statistics Office, companies are classified by their main activity, according to the ISIC Rev. 3 Adapted for Colombia, in such a manner that the measurement of the other services activities that they perform will appear added to the income results, personnel and other published variables.

The production of the services sector is measured through the operating income earned during the economic activity, which is solely obtained by the rendering of services by the company and those generated by the sale of goods, whether or not they are associated with the services provision.

On the other hand, the sector's labor force refers to the average number of persons engaged in the company, either remunerated or not, during the quarter. This includes: owners, business partners and family members without fixed remuneration; permanent and temporary personnel hired directly by the company or personnel hired through other companies (outsourcing), staff on mission and apprentices.

Definition of the statistical unit

The statistical unit used in this investigation is the enterprise, due to the advantages that it brings to the data collection process and for the adoption of recommendations on this issue at international level. ISIC 3 defines enterprise in the following way:

> "An institutional entity in its capacity as a producer of goods and services. An enterprise is an economic entity with autonomy in respect of financial and investment decision-making, as well as authority and responsibility for allocating resources for the production of goods and services. It may be engaged in one or more productive activities[2].

One of the characteristics of an enterprise as an economic and legal entity is that it may have one or more establishments that operate under the same identification and company name. An establishment is defined as: "An enterprise, or part of an enterprise that is situated in a single location and in which only a single (non-ancillary) productive activity is

[2] *DANE. International Standard Industrial Classification of All Economic Activities, Rev. 3 Adapted for Colombia, Page 15.*

carried out, or in which the principal productive activity accounts for most of the value added"[3]

The enterprise can have additional units called ancillary units, situated in a different location, which can support the main activities. These units generate products and services for the enterprise's intermediate consumption, although their production is not physically incorporated into the product of the main activity and their value is not registered separately. Examples of these are the administrative offices; sales departments repair workshops, and other sites that carry out accounting or information technology activities, among others. Usually, these units are not subjects in statistical research, since their production is already incorporated in the enterprise's production, or in that of the establishment to which they give support..

The advantage of using an enterprise as the statistical unit instead of a local unit or establishment is that this procedure facilitates data collection, considering that many companies consolidate their financial statements only at this level. The main drawback in this case is that it prevents the disaggregation of information at geographic level. Thus, the use of local unit or establishment as the statistical unit is a stage that will be developed in the research, taking advantage of the fact that companies provide information on a regular basis and that this promotes a culture of statistics with more disaggregated information.

Thematic content

In addition to the quarterly analysis of data related to identification and localization, necessary to keep the directory of the sector updated, QSS focuses on two main variables: Operating income and occupied personnel, with the respective personnel expenses.

- Operating income: Income from services rendered, income from sale of goods associated with the services rendered, income from sale of other goods and other operating income. This measurement shows the evolution of production in the services sector in the short run.

- Occupied personnel and personnel expenses incurred: This refers to the number of persons employed, salaries, wages and social benefits paid to occupied personnel, by occupational category. This information enables follow-up to occupied personnel from the sector's demand point of view.

When considering other variables that can grasp the situation of the services sector, such as volume and price indicators, this could represent a greater difficulty for the research, both for the definition and heterogeneity within each sub-sector, and for the low availability of this information in the companies.

[3] *Ibid. Page 16.*

The activities under study correspond to those services classified as market services; and those activities considered as non-market services are excluded.

Classification used

QSS uses the ISIC Rev. 3 Adapted for Colombia. This is the standard classification of all economic activities and its adaptation to Colombia pretends to properly reflect the different economic activities that are being developed in the country, so its use is the most convenient.

The approach recommended by the ISIC Rev 3 A.C. to perform the classification process of statistical units is based on the added value of services rendered. However, difficulties in obtaining added value information for individual services forces the use of other criteria. In this case, the most recommended approaches are: The use of gross production of related services; their sales value or the proportion of persons employed in the different types of activity. In the case of enterprises that carry out different types of activity, the ISIC class is assigned to the activity having the highest proportion of added value, or its approximations, using the top-down method (for more details please refer to the ISIC 3 A.C.).

Basic concepts

Services

With respect to services, there are numerous definitions, which have subtle differences and diverse levels of application. One of the basic concepts used in DANE's statistical operations defines services as heterogeneous products that are created every time they are requested, upon which no ownership rights can be established by the user and cannot be traded separately from their production. Services cannot be transported or stored, therefore their sale corresponds to the right to use a service whenever it is required.[4]

Another definition that is used is the following:

> "Services are not separate entities upon which ownership rights can be established. Furthermore, they cannot be traded separately from their production. Services are heterogeneous, make-to-order products that typically consist of changes in the conditions of their consuming units and that result from activities carried out by their producers on the demand from the consumers[5]"

Production

> Defined as "an activity or physical process carried out under the responsibility, control and management of an institutional unit, in which labor force and assets are

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[4] DANE. Annual National Accounts Methodology. Goods and services operations.
[5] United Nations. SCN 1993, 6.8.

used to transform goods and services inputs into other outputs of goods and services"[6].

Market and non- market production

"*Market Production*: Own final use production and other non-market production. The first concept refers to the production sold at economically significant prices meaning that the production value perfectly covers its costs and therefore generates surplus. Non-market production refers to the production from the Government and non-profit institutions serving households (ISLSH for its acronym in Spanish), which is provided free of charge or at reduced prices to individual households or to the community in general, and is valued for its costs"[7].

International Benchmarks

The international recommendations adopted for the QSS correspond to those provided by the United Nations Organization (UN) in regard to the Classification of Activities and Statistical Units, in the document: Recommendations for the 1973 World Program of Industrial Statistics, Series M. No. 54.

At international level, benchmarks related to circumstantial or situational statistics on services are limited, and thus, availability of guidelines and recommendations to be followed is inadequate. An important guide for an index of the services sector for production of statistical information is the "*Compilation Manual for an Index of Services Production",* published by the Organization for Economic Co-operation and Development (OECD)[8]. This document describes the basic process to create an index of services for member countries, and also serves as a guide with recommendations for a better comparability of data at international level. The main aspect highlighted in this document is the complete and all-round handling of the basic concepts, to ensure the quality of information on a circumstantial index of the services sector, in each of the phases related to processing, adjustment and data dissemination.

Spain's Manual for the Annual Survey is an important reference, given the experience gained in the development of these investigations. This survey follows the regulations from the European Commission Statistical Office of the European Communities (Eurostat) and contains both definitions and models of questionnaires for services with instructions for their completion by the companies.

Furthermore, the statistics office of Canada (STATCAN) in its document *Quality Guidelines of* StatCan[9] provides general guidelines to ensure the quality of statistical production. Additionally, it describes the basic principles of the statistical production and advises on each of the statistical generation processes (identification of objectives and information needs; statistical and data capture design; information handling and settings; imputation, calculation and assessment of the quality of statistical information).

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[6] *United Nations. SCN 1993, 1.20.*
[7] *DANE. Glossary Annual National Accounts.*
[8] *OECD. (2007). Compilation Manual for an Index of Service Production. Paris.*
[9] *Statistics Canada. (2009). Quality Guidelines. Ottawa.*

2.2 STATISTICAL DESIGN

2.2.1 Basic components

Type of statistical operation

According to the statistical operations used by DANE to design, produce and disseminate statistical information, the operation used in this study is the census of large enterprises.

Universe

The universe is comprised of legally established enterprises, which reside in the national territory, whose main economic activity is the rendering of services. State companies are excluded.

Target population

Formally established companies (with "NIT" - tax identification number in Colombia and mercantile registration certificate[10]) located in the national territory with 50 or more persons employed, or annual income greater than or equal to 5 billion Colombian pesos of the year 2006, and whose principal activity is the provision of any of the following services:

- **H** Sale of prepared foods at point of sale, bars and similar establishments
- **I** Transport, storage and communications
- **K** Real estate, renting and business activities.
- **M** Higher Education
- **N** Health and social work
- **O** Other community, social and personal service activities.

At the beginning of the project the main objective was to have an index of the services sector similar to the one available for the industry sector that is, at the level of each one of the activities that make up the sector. However, in practice this was difficult given the heterogeneity and instability of services. In terms of certain services, information cannot be retrieved efficiently through these surveys; nonetheless it is possible to obtain reliable and comprehensive information either indirectly or through other sources, as indicated below:

- *Electricity, water and gas supply* (ISIC 40-41): This section is managed by the Direction of Synthesis and National Accounts through the annual reports of the

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[10] "*The Mercantile Registry enables all entrepreneurs engaged in any commercial activity to act publicly as a trader or certify themselves as merchants, as well as the access to information to meet potential clients. Moreover, it provides business legal security, and serves as a gateway for funding, training, and business support programs. All natural and legal persons engaged in merchant activities in Colombia are required to be registered in the Mercantile Registry*"

"Contaduría General de la Nación" (General Accounting Office) and the "Superintendencia de Servicios Públicos" (Superintendence of Utilities). In order to analyze the evolution of the quarterly accounts the information is calculated by volume of services production, with data providing from Ecopetrol[11], Interconexion Eléctrica S.A- ISA[12] and the Superintendence of Utilities, that make up the universe of the section.

- *Transport (ISIC 60-62):* This includes air transport, land transport, sea and coastal water transport and inland water transport.

  - Air transport: This includes information prepared by the Aerocivil[13]. on both passenger and freight transportation, as well as postal services. Inquiries can be made on Aerocivil's Web site *(www.aerocivil.gov.co/).*

  - Land transport: This division includes information on transport of passengers and freight, which is prepared by the Ministry of Transport. This information can be found on this Ministry's Web site *(www.mintransporte.gov.co/).*

  - Water transport: The information on transportation of freight or passengers over water, by flags, ton, and type of vessel, is prepared by the General Maritime Directorate (DIMAR for its acronym in Spanish) and queries can be made on its Web page *(www.dimar.mil.co/) .*

- *Inland water transport:* Information prepared by the Ministry of Transport. This information is found on the Ministry's Web site (www.mintransporte.gov.co/).

- *Activities of Travel Agencies:* This information is prepared in DANE and included in the Quarterly Sample on Travel Agencies.

- *Accommodation activities:* Information prepared by DANE in the Hotels' Monthly Sample HMS *(Muestra mensual de Hoteles MMH).*

- *Financial intermediation (ISIC 65-67):* The necessary information for the production estimates on this sector is found at the Superintendence of Financial Services' Web site (www.superfinanciera.gov.co/); therefore, the collection of data through this type of surveys is not required.

- *Education (ISIC 801-804):* The only item included is "private higher education" given that DANE's investigation only considers private higher education costs, but does not include income. The other levels of education were excluded from this research taking into account that there are other studies that measure their behavior, thus covering this sector in an adequate manner.

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[11] *State-owned mixed economy company attached to the Ministry of Mines and Energy, in charge of administering the Nation's hydrocarbon resources*

[12] *State holding company dedicated to transportation of electricity. An important participant in the energy and telecommunications sectors in Latin America*

[13] *Administrative Unit of Civil Aeronautics, a semi-independent unit of the Colombian Ministry of Transport, in charge of the organized development of civil aviation in Colombia, its aviation industry, and the safe use of the country's air space*

- *Social work and health services (ISIC 851)*: Information received from public health companies is consolidated by the “Contaduría General de la Nación” (General Accounting Office), which makes it unnecessary to collect this type of information through surveys. In the case of private companies, the Superintendence of Health has some information although it is not provided in a timely manner, and therefore, to obtain the information through this survey is justified. Likewise, Group 852 that corresponds to veterinary activities is excluded due to the lack of information in the directory; and Group 853 corresponding to social work activities, is also excluded given that the possible sources do not meet the established requirements for inclusion.

- *Other activities related to community, social and personal services:* The following activities were excluded, given that the pilot test evidenced different problems for this type of companies to provide the required information:

  Division 90 (Sewage and refuse disposal, sanitation and similar activities)
  Division 91 (Activities of membership organizations)
  Activity 923 (Library, archives, museums and other cultural activities) and activity 924 (Sporting and other recreational activities) are excluded from Division 92

- *Extra-territorial organizations and bodies (ISIC 99)* were excluded from the investigation because the pilot test evidenced problems regarding the delivery of information by these entities.

Finally, for budget reasons only companies of forced inclusion are studied. Activities that conform the target population are presented in the table below:

Table 1. Sections and activities covered by the QSS selection framework

Section	**Class**	**Description**
H	552 and 553	Restaurants, bars and canteens. This section does not include accommodation
I1	6310, 6320, 6331, 6332,6333, 6339 and 6390	Supporting and auxiliary transport activities. This section does not include activities of travel agencies.
I2	6411 and 6412	Post and Courier activities.
I3	6421, 6422, 6425, 6426, 6423 and 6424	Telephone services. Data transmission Transmission of radio and television programs Transmission via cable. Other telecommunications services Services related to telecommunications

K1	7010, 7020, 7111, 7112, 7121, 7122, 7123, 7159 and 7130	Real estate activities; renting of machinery and equipment without operator and of personal and household goods

Section	Class	Description
K2	7210, 7220, 7230, 7240, 7250 and 7290	Computer and related activities.
K3	7310, 7320, 7411, 7412, 7413, 7414, 7421, 7422, 7495, 7499 and 7494	Research and development. Legal and accounting activities. Tax consultancy. Market research. Business and management consultancy. Architectural and engineering activities and those related to technical consultancy. Technical testing and analysis. Packaging activities. Photographic activities. Other business activities.
K4	7430	Advertising.
K5	7491, 7492 and 7493	Labor recruitment and provision of personnel Investigation and security activities. Building-cleaning and industrial-cleaning activities.
M	8050	Private higher education.
N	851	Human health activities.
O1	9213	Radio and television activities
O2	9211, 9212, 9220 9214, 9219 and 930	Other entertainment activities and other services.

Source: DANE – ISIC Rev 3 A.C

Geographic coverage and disaggregation

The geographical coverage of the QSS, as well as its geographical disaggregation, is national.

Statistical Unit

The statistical unit is the legally established enterprise, with NIT and mercantile registration certificate, which is exclusively or predominantly dedicated to the mentioned service activities of the target population and is established within the national territory.

Observation and Analysis Unit

In this research the observation and analysis unit is the same and refers to the enterprise's services provider that meets the previously established requirements of the target population.

Study and classification variables

The variables used for classification by enterprise are:

- Annual average of occupied personnel
- Annual income

The variables under study are: Total average of occupied personnel and by type of contract, as well as income earned in the quarter.

Periodicity

The information is collected and published on a quarterly basis.

Collection period

Data collection starts 5 days after the reference quarter and extends up to 60 calendar days after the same period.

2.2.2 Design of indicators

The information produced refers to indices and variations of the nominal income and average occupied personnel.

Calculation of indices

An index is used to reflect the evolution or growth of a value in a specified period of time in relation to another, called the reference or base period. Simple fixed base indices[14] were used in this research. The reference year is 2011.

[14] *For more details on the characteristics of the indices see Eurostat. (2001) page 39.*

The simple index is the ratio between the variable total in the quarter *i* and the quarterly average of the variable in the reference period; the mathematical expression is:

$$\hat{I}_{(i)y} = \frac{\hat{t}_{(i)y}}{\hat{t}_{(i_o)y}} * 100$$

Where $\hat{t}_{(i)y}$ is the total of the variable in the quarter *i* and the base of the index $\hat{t}_{(i_0)y}$ is the quarterly average in the reference year calculated as follows:

$$\hat{t}_{(i_o)y} = \frac{1}{4}\sum_{i=1}^{4}\hat{t}_{(i)y}$$

For calculation purposes, $\hat{I}_{(i)y}$ can be expressed as:

$$\hat{I}_{(i)y} = \hat{I}_{(i-1)y}\frac{\hat{t}_{(i)y}}{\hat{t}_{(i-1)y}}$$

Where,

$\hat{I}_{(i)y}$: Percentage Index of the variable in the period of time ***i***.

$\hat{I}_{(i-1)y}$: Percentage Index of the variable in the period of time ***i*** -1

Calculation of variations

A variation is a measure of the relative change of a variable in a period in relation to another. The annual variation is defined as the percentage change calculated between the quarter of the reference year and the same quarter of the previous year, as follows:

$$v_{i\ y} = \left(\frac{\hat{t}_{i\ y}}{\hat{t}_{(i-1)y}} - 1\right) * 100$$

Where:

y = Variable under study or of interest

v_{iy} = Total percentage change of y in the period of time *i* with respect to the previous period

$\hat{t}_{iy}$ = Estimated total of the variable y in the period of time ***i***

$\hat{t}_{(i-1)y}$ = Estimated total of the variable y in the period of time ***i-1***

The variation for a domain under study is calculated with:

$$v_{iyd} = \left(\frac{\hat{t}_{iyd}}{\hat{t}_{(i-1)yd}} - 1 \right) * 100$$

Where:

v_{iyd} = Percentage variations for the total ***y*** for the domain under study in the period of time ***i*** with respect to the previous period.

t_{iyd} = Total of ***y*** in the domain under study for the period of time ***i***

$t_{(i-1)y}$ = Total of ***y*** in the domain under study for the period of time ***i-1***

Similarly, the following variations are calculated:

Cumulative year-to-date variation: Percentage of variation in the period between the start of the first quarter of the year and the current (reference) quarter compared to the same period of the previous year.

Annual accrual (year-over-year) variation: Percentage change of the accumulated figure for the last four quarters until the current (reference) quarter, compared to the accrual in the same period of the previous year.

Design of processing and imputation methods:

A statistical model is used for the imputation of entries with missing data, which considers the growth ratio in the series or the data variation presented in the methodology of imputation, defined as:

$$Vart = \beta_1\ Vac + \beta_2\ Vem$$

Where:

Vart = Variation that is imputed in the t period.

βi = Weighting coefficients, their sum should be equal to 1 so that there is convergence in the imputation *i: 1, 2*

Vac = Historic average variation within the activity.

Vem = Historic average variation by enterprise.

The model describes the variation imputation of missing data as a weighted average of variations of variables in the enterprise and in the activity, where the βis are the weighting coefficients of variations. The purpose is to estimate the unknown parameters βi using an iterative method with the least squares model and restricting them to the sum being equal to 1, so that there is convergence in the imputation.

Deflation

Following the recommendation of international consultants, the QSS does not carry out any deflation or adjustment by prices. The basic reason is to enable the user to establish criteria to carry out this deflation, particularly inside the process of consolidation of figures in the quarterly national accounts.

2.2.3 Design of instruments

The information of the QSS is obtained through a questionnaire for the production of services (Annex A), completed by each enterprise belonging to the sample.

The questionnaire is made up of a heading and four chapters, as indicated below:

Heading: Contains the order number that DANE assigns to each one of the sources of information, the activity code and identification number to enable DANE identify the source and the activity to which it is dedicated.

Chapter I. Identification and general information

Chapter II. Activity of establishments that make up the enterprise during the quarter. This is the same chapter that is included in the Services Annual Survey, in order to keep the establishments´ directory updated. It refers to the number of establishments that the enterprise has had during the data reference quarter; the new openings and how many were closed down; and the total number of establishments at the end of the same period. The structure of the enterprise can be known with this information.

Chapter III. Net *operating and non-operating income earned.* This is the chapter that shows the income earned by the companies disaggregated by type, this is, by the services rendered, the sale of goods associated and not associated with the services rendered and other net operating income.

Chapter IV. Occupied personnel, salaries, wages and benefits incurred. This chapter refers to the number of persons employed according to category of occupation and expenditures for wages, salaries and benefits incurred in the quarter, in order to learn about the company's labor demand and the costs incurred in for this concept.

For private higher education services (ISIC 8050) the information on occupied personnel and personnel costs is obtained through a special module, in which the information on faculty staff is disaggregated, taking into account if they are full-time, part-time, or by classroom hour teachers and instructors, or assistant teachers.

2.2.4 Characteristics of the Statistical Design

Statistical framework

The QSS statistical framework is a list of enterprises identified by NIT or the commercial /mercantile registration certificate listed by address, phone and e-mail. Of a national coverage, this list is built with the economic census of the year 1990 and updated with information from the Superintendence of Corporations, of Surveillance, of Cooperatives, the Colombian Confederation of Chambers of Commerce (Confecámaras[15]), Guilds, the Vice Ministry of Tourism, the Yellow Pages and the Annual Surveys conducted by DANE, among others.

Parameters to be calculated

The parameters used for calculations in the Quarterly Services Survey (QSS) are the variations and indices for the income and personnel variables.

Statistical design

The target population was delimited according to a stratification of the framework by enterprise size, measured in terms of income and occupied personnel. Companies having annual income equal to, or exceeding 5 billion Colombian pesos, or with 50 or more persons employed are considered large enterprises.

Population size

The survey targeted the 3,195 largest enterprises and the information currently published refers to 2,738 enterprises, from which information was obtained.

Between the first and second quarters of 2009, 639 companies were incorporated into the QSS, while 625 companies were added during the first quarter of 2011. These adjustments resulted in a change of basis of the indices and a splice with the previous series using the chained indices methodology.

Splice methodology for added companies.

In view of the inclusion of new companies in the QSS from the first and second quarters of 2009 and the first quarter of 2011, as a result of the improvements made in the economic directories being carried out by DANE, the need to establish a method that would compare the quarterly, annual, year-to-date and twelve-month variations and contributions was

[15] *Confecamaras brings together the 57 Chambers of Commerce that exist in Colombia. This is an institution promoting regional business development and defending free enterprise and private initiative; as well as supports entrepreneurs in the country through programs to strengthen and improve their competitiveness by focusing on three key strategic themes: Business formalization, high-impact entrepreneurship and innovation.*

established. The method used, developed and implemented by DANE to splice the series, considering additions to the initial sample of sources, is explained as follows.

The methodology used implied the development of the following steps:

1. Calculation of the quarterly series ratios, including those from the first quarter of 2007 through the first quarter of 2012.

2. To determine that the series of income and personnel variables in absolute values were not comparable due to their different coverage as from the first and second quarters of 2009, and then from the first quarter of 2011 onwards.

3. To identify a method to compare the series. This method consisted in the implementation of quarterly relative variations of the sample with greater coverage in a regressive manner. Once these variations were applied, the values of income and personnel variables were recalculated for the periods from the first quarter of 2007 and the fourth quarter of 2010, at the section and total levels.

This method implies the following assumption: On average, new added companies behaved in a similar way as the companies that were part of the initial sample.

4. To estimate variations and contributions based on recalculated absolute values.

One of the characteristics of this splicing methodology is that it keeps the historical series calculated before the addition, while data reflect an increase in the coverage of the investigation, and therefore in the quality of the information

3. STATISTICAL PRODUCTION

3.1 LOGISTICS ASPECTS

3.1.1 Awareness raising

The awareness-raising process is carried out at the beginning of each operation with the data sources that are providing the information. This process is performed via email. Additionally, the person who plays the role of analyst-collector shows the collection instrument to the sources and delivers a letter containing the username and password assigned to the company to access the system within the application on the Web site, all this in order to fill out the questionnaire. This process is accompanied by a permanent advice or counseling on topics related to filling out questionnaires and information capture.

3.1.2 Training

The training given to the operative personnel is conducted over 3 to 4 days before data collection starts. The training process focuses on the main methodological aspects of the research, the analysis of variables and use of teaching aids. This process is important to the extent that each stage is directed towards, and unifies criteria for the adequate use of the system and of the questionnaire. Field groups receive methodological reinforcement trainings daily, whereby clarifications are made regarding the handling of sources that present different levels of complexity. The general plan of the training process covers:

- General considerations.
- General importance of the services.
- Commercial negotiations of services.
- Technical card of the QSS.
- Statistical design.
- QSS Questionnaire: Chapter by chapter and variable-by-variable are explained.
- Basic Concepts on the Operation.
- QSS Operation.
- Management of novelties.
- Instructions on the use of the application.

3.1.3 Staff hiring

The field staff team is made up of the investigation's technical assistant, the coordinator and the monitoring collectors.

The profile of the personnel convened corresponds to students with four approved semesters of technological, vocational, or university studies in: Economics, Business Administration, Financial Management, Accounting, Statistics, Industrial Engineering, or Computer Systems Engineering. They must also have one year of related experience. A different alternative to meet the profile is to have a high school degree and three years of experience in the area.

The same number of collectors is used for every statistical period. These collectors are chosen either by call in a selection process, or through direct invitation when they have previously worked in other investigations and therefore, they already have the expertise and knowledge on the project. Once the résumés that meet the profiles are analyzed, they are short-listed and the names of the persons that will start the training process for a week are published. The selected persons are required to take a technical test on the last day of the training and those who obtain the best scores are the ones that will participate in the research. A pre-selection requirement is the 100% attendance to the training course. Territorial Divisions are autonomous in the staff hiring process.

3.2 DATA COLLECTION STRATEGIES

Data collection for the QSS is made through the use of an electronic questionnaire. Once the sources complete the questionnaire, the monitoring collector is responsible for advising the enterprise and for the review, verification and debugging of information, for which the collector accesses DANE's Website with the usernames and passwords assigned to each one of the sources.

Collection Instruments

Questionnaire Completing Manual (QSS): A guide or tool used by the enterprise to complete the questionnaire. The access to such questionnaire is made through DANE's Web site: (www.dane.gov.co), by following the route: *"Económicas / Comercio y Servicios / Muestra Trimestral de Servicios / Formulario electrónico / Manual Básico"* (on the site's Spanish version).

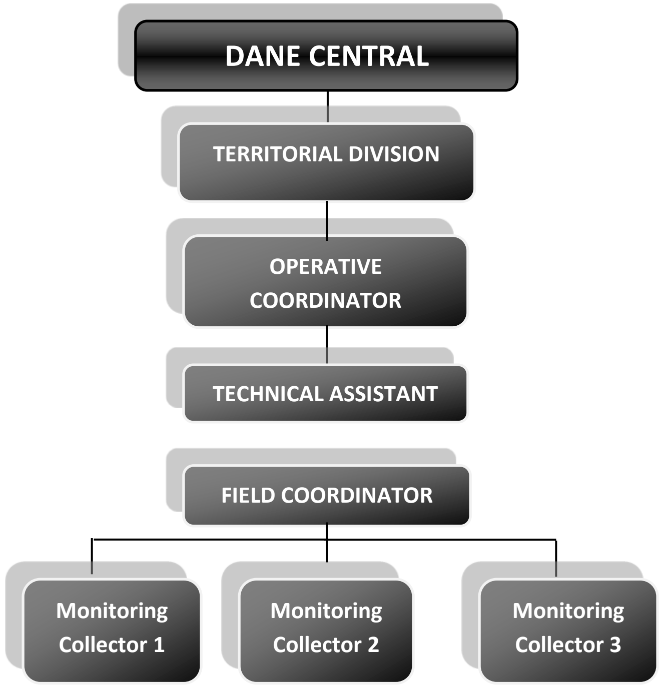
Critical Analysis and Codification Manual (QSS): Document that establishes the parameters and ranges to determine the consistency of the project's main variables. This is for the exclusive use of the operations personnel as an input for information consistency.

Collection questionnaire (QSS): This is an electronic online questionnaire, which is accessed through DANE's Web site (www.dane.gov.co), and following the route: *"Económicas / Comercio y Servicios / Muestra Trimestral de Servicios / Formulario electrónico"* (on the site's Spanish version).

The questionnaire is made up of a heading and four chapters, as follows:

1. Enterprise Identification
2. Quarterly activity of establishments
3. Net operating income earned
4. Occupied Personnel

3.2.1 Operations organization chart



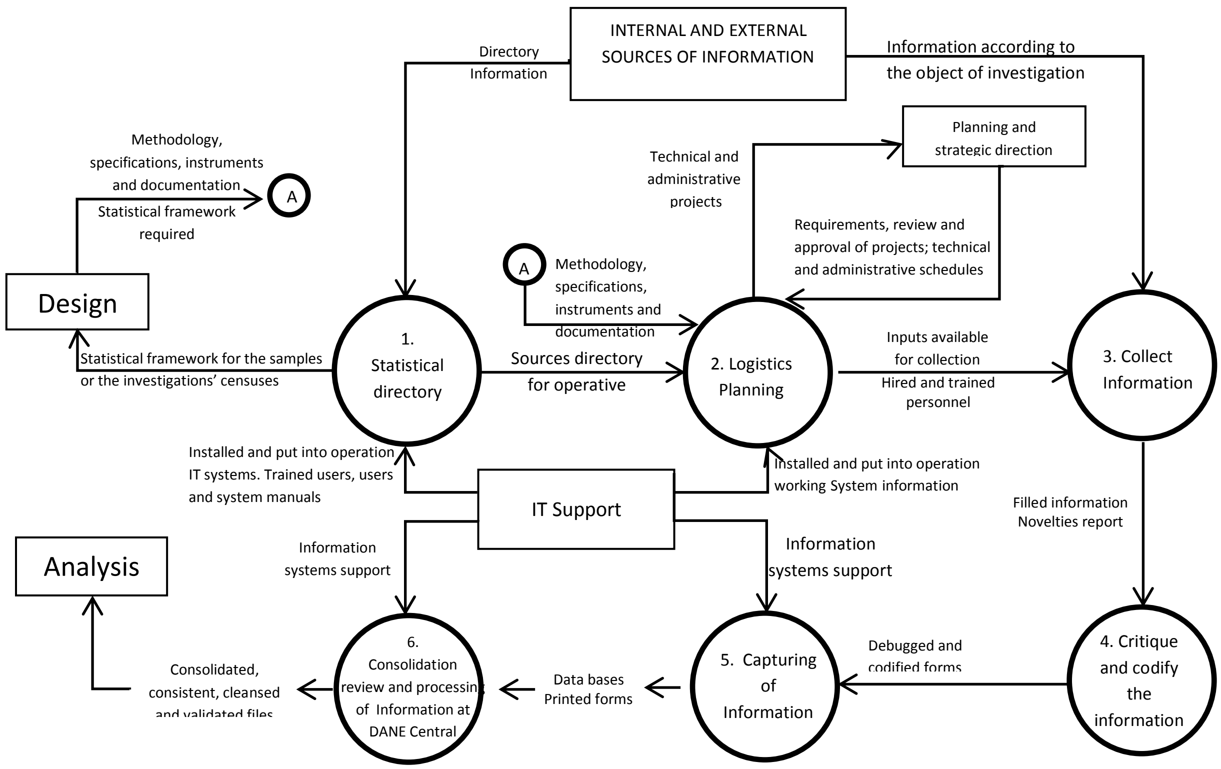
Source: DANE

The operation's logistics and planning in terms of programming of activities and of resources are carried out at DANE Central. Preliminary studies are prepared and each planned activity is being followed up. Subsequently, the process of personnel training in logistics, critical analysis and consistency of information is supported. The data sources are informed about the collection period, and companies are advised on special cases, in order to ensure the quality of information.

The Territorial Divisions verify the consistency of the information and subsequently review the electronic forms that have been filled out in the application. Once the review and critique analysis processes are completed, the coverage control is carried out and each Territorial Division ends the quarter knowing what the final coverage is for the period. Subsequently, the quality indicator is generated and the responses of the companies are tracked. Finally, Territorial Divisions deliver the information collected and properly reviewed for its analysis in DANE Central, by the Self-filling out and Records Logistics team. This team checks the sources that present novelties, the final coverage, and prepares the summary tables for review and analysis. The team is also responsible for detecting variations outside the range, validating observations and consulting the source(s) when needed.

The complete statistical production process can be viewed in the following flow chart[16]:

Graph 1 – QSS Operative flow chart



Source: DANE

3.2.2 Operative scheme, method and collection procedure

Operative Scheme

The Self-filling out and Records Logistics team makes the updated application for data collection (electronic questionnaire) available to the Territorial Divisions, being the responsibility of the Technical Assistant. Moreover, this team also sends the passwords for all the sources, the respective directory and the project's schedule.

Each Territorial Division, through the project's Technical Assistant, is responsible for: The organization of the operation, selection of field staff, distribution of sources among collectors, and the follow-up of coverage, review and capture processes. In addition, in some cities the research coordinators count on special support for the activities related to the monitoring collectors.

[16] Document: *"Levantamiento de procesos. Muestra Trimestral de Servicios". (Description of processes. Quarterly Services Sample).*

Collection method and procedure

The research coordinator in every Territorial Division assigns workloads and distributes the amount of data sources among collectors, who are in charge of contacting the sources by phone and agreeing with them on the date of the visit. Data collection is organized as follows:

- Quality assurance reviewer is responsible for presenting the research to the sources and for introducing them to the operation of the collection instrument, for which he hands over the password that permits the access to the electronic questionnaire.

- A DANE officer must advise permanently the sources on the completion and information capture process of the research, and to track and monitor the supply of information from the sources, according to the directory.

- As the operation develops, the analyst-collector is required to inform the assistant and/or the investigation's technical support about any inconsistencies that may have arisen during the operation process (collection, review and delivery of information). In addition, the quality assurance reviewer checks the information received and/or captured; consults and verifies with the source the inconsistencies arisen before making any adjustments to the data. The reviewer also makes relevant comments; detects inconsistencies at the time the information is entered; and verifies the pertinent adjustments to ensure the statistical quality of the information, in accordance with the guidelines established in the research methodology.

- In the event that it is necessary to contact by telephone the sources that require clarification on the information contained in the respective forms, the analyst-collector consults and verifies changes before making any adjustments to the data and also makes the relevant comments.

- Finally, the capture and the required data filtering of the forms are performed in accordance with the processing system.

If a Microsoft Excel® formatted questionnaire is required for those companies that refuse to complete it via the electronic questionnaire, the application permits its printing by the source, as well as its manual processing. In all cases, the collection method is the electronic self-filling out form processed by the source with the information provided being automatically stored in the system.

3.3 DATA TRANSMISSION AND PROCESSING

3.3.1 Data transmission to DANE Central

Territorial Divisions carry out periodical cut-offs or closings to determine coverage, the quality indicator and the monitoring of responses received from the companies. In the final stage, according to the dates set as the maximum time of delivery of the information, the Territorial Divisions make a final cut of the information that is made available to DANE

Central, where the system administrator definitely closes the application at a national level, to continue with the subsequent processes. In the electronic forms the information is stored directly on DANE's server, where daily security backups are performed.

Data transmission to the databases is made online by means of the direct access of the sources to the electronic system developed to capture information on DANE's Web page (www.dane.go.co), following the route "*Económicas - Comercio y Servicios – Muestra Trimestral de Servicios - Formulario Electrónico" (*on the site's Spanish version).

Once the information is captured, preliminary databases are generated that enable the validation of consistency and coherence of results. The information is adjusted considering the parameters and the consistency values designed for the information. The forms then go through a quality assurance and critical analysis process. The quality assurance process in the field pursues the timely detection of errors in the collection process. The collector himself corrects those inconsistencies that cannot be solved in the office, considering his overall and specific knowledge of the situation.

For the development of the quality assurance and critical analysis process, the collector counts on a manual that contains the methodological guidelines to verify the consistency and analyze the information provided by the companies for each period of the process.

As support to the enterprise on the filling out of the questionnaire a manual containing the requirements for each of the questionnaire's variables, e.g. the description of concepts and illustrative examples on the report of information is provided. This manual can be downloaded or accessed on DANE's Web page, where all collectors can enter with their own username and password for inquiries and validation. The application to capture information has been developed to detect inconsistencies through warnings, requesting clarification and/or corrections to the information, if necessary. When doubts relating to the information arise, before consulting with the source it is necessary to go through the complete application to check for comments or remarks; only in those cases where the necessary explanation or not sufficiently clear information are found will the informant be contacted to make the required corrections and record the additional relevant remarks.

File consolidation

The creation of users and assignment of passwords for each of the sources of the investigation's directory allows the access to the required information in the services surveys through DANE's Web page.

Once the information is collected it is stored in a database and consolidated in homogeneous files, separating all the data that make up the directory from the information concerning income, employed personnel and other personal expenses. This information is then made available to the logistics, thematic and sample designs teams for its respective processing and to generate revision and output tables.

From the coordination of Self-filling out and Records Logistics the time schedule with closing dates of the period is set, and from that moment on the information remains at DANE Central's disposal, for its corresponding processing. Once the closing is carried out, the coverage monitoring is performed in Logistics, in order to detect the sources that have provided the information. This is how the information is classified by activity and the percentages of the debt and novelties for every Territorial Division are made known and also for the national total, so that from DANE Central the debt collection and confirmation of novelties is started. This is done at first at the level of each technical assistant and subsequently, when necessary, at the level of the companies themselves.

3.3.2 Data processing

Verification of data internal consistency and settings

When an enterprise fills out the QSS questionnaire, it uses three filters for the verification of the information

- In the first filter, each collector carries out the awareness raising and data collection processes, period after period, on the required statistical periods. Subsequently the monitoring and follow-up of the information provided by the sources according to the directory is carried out, and the information provided is reviewed taking into account the methodology and the established parameters, in order to guarantee coverage, timeliness and final quality of the sample statistics.

- The second filter of information in every Territorial Division is carried out by the Coordinator, who is responsible for the preliminary activities and for managing the study in all of its aspects. The activities are: To train, coordinate and assign workloads for the data collection of the QSS process.

- The third filter is carried out in DANE Central on the information classified as complete; this information is checked again to ensure its consistency and final quality.

The review process takes place orderly and controls the handling of such information. The filters are implemented rigorously in coordination between the different operational areas.

The historical consistency of the data is ensured by the analysis card created by the application, which contains the variations for each of the variables in the reference quarter, with respect to the previous quarter of the same year and also with respect to the same quarter in the preceding year.

Imputation and/or coverage adjustments

The application designed for this study includes a series of reports in the menu, that enable the control of the sources that have not yet provided the information, i.e., that are in debt or missing data. Likewise, it is also possible to identify other missing sources because of any novelties different from debt, as in the case of companies that are not found at the address provided in the directory, or those that are not economically active, which have already been liquidated and other possibilities.

The processing and imputation method for information in the last statistical period is described in section "*Design of processing and imputation methods"*. For the imputation of data within a historic series a model is applied using the information by source of the SAS, in such a way that the imputed data are close to the actual values, to avoid the breaking of the series. This method assumes the temporary self-correlation and homogeneity at the different aggregation stages. This means that the imputation should be in line with the behavior of the historical series, and of the levels that contain the missing data.

Generation of Output tables

Once the complete review, consistency and adjustments process is completed, with the QSS information and processing files from the SAS software, databases are downloaded and placed at the disposal of the Sampling Designs team. They review the novelties, the general consistency of the information and create output tables for the total services by type of income, by occupational categories and by certain sections according to the ISIC. The information at micro data level is not available for external analysts, or for users.

3.4 QUALITY CONTROL METHODS AND MECHANISMS

3.4.1 Validation and consistency rules

For the design of the application there are consistency specifications previously established, in order to find inconsistent data in each questionnaire, from the moment of the data capture. When this occurs, the program sends a message requesting corrections or explanatory feedback.

The detection of other types of inconsistencies, such as outliers that do not meet the validation specifications, is carried out with SAS software and programs, which are designed according to specific requests.

The investigation has established acceptance ranges[17] of the variations for each variable, in such a manner that if any of them exceeds these limits the variable is submitted to revision and its consistency with regard to the general behavior of the company is analyzed. Furthermore, there are also controls that ensure consistency of the information with cross-checks between variables and chapters.

3.4.2 Control instruments for supervision

Controls applied on-site by the field coordinator are:

- Directory verification.
- Continuous monitoring of plans and work schedules previously designed at the beginning of the operation.
- Supervision and technical assistance provided to data collection analysts.
- Continuous monitoring of the processes related to collection, critical analysis and capture of the information, with the periodic review and evaluation of the tasks performed by the operative personnel.
- On-site visits to verify the data collection process according to the sources assigned to quality assurance reviewers.
- Monitoring of the progress of the research coverage, in order to ensure the proper and timely processing of forms assigned to every quality assurance reviewer.
- Review by sampling of the information captured in the application, in order to ensure the quality and consistency of information.

[17] *As its name implies, an acceptance range specifies the levels for which the variables are acceptable without requiring a more detailed revision. Working document DANE-DIMPE "Especificaciones de rangos de aceptación de la MTS" (Specifications on the QSS acceptance ranges).*

- Submission of periodic progress reports required by Territorial Divisions and DANE Central.
- Provide support to collection analysts on the communication with sources that have difficulties to render the information.
- Follow-up to enterprises with missing information, in accordance with the schedule of activities and collection deadlines established.
- Provide support to sources that require advice on how to complete the corresponding forms.
- Provide support to the sources with the information capture process, according to the systems use for such purpose.

The IT systems area applies operational control instruments through the IT technician in charge in each office and sub-office. This technician monitors the assigned sources by means of the operative report generated by the System Control is performed on coverage, data entry or typing errors, and on incomplete or inconsistent information. Subsequently, analysis cards are created per variable of each one of the sources reporting the status of the information. This process is carried out for every source and for every collection-analyst responsible for the reviewing process, through the control of changes in the system, in order to determine progress in coverage, to manage the changes made to the information and the historical series reported by the source.

3.4.3 Indicators for quality control of the research processes

Quality control is carried out by the technical assistant of the Territorial Division with the revision of all the forms assigned by the system to every responsible of the process, through the card analysis of each company. The quality indicator is backed by conclusions and checks between chapters that are created by the application for every enterprise. The technical assistant, as responsible for the system, is required to complete the weighting tables and obtain the indicator for each one of the selected forms. The corrections made by the quality reviewers or collectors in the capture application are to be verified.

The first step is to calculate the quality index (QI) for each responsible of the process (RP) which is obtained as the arithmetic average of the scores for each electronic form that is revised by the project's technical assistant.

$$QI\ (Process)_{Sample} = \frac{\sum QI\ (RP)_i}{\#forms}$$

The quality indicator (QI) by process for the Territorial Division is calculated as the average of indicators for each responsible of the process (RP) in the Quarterly Services Survey. If in the Territorial Division there are k persons responsible for the process, then the quality indicator by process is:

$$QI\ (Process)_{Sample} = \frac{\sum QI\ (RP)_i}{k}$$

The total quality indicator by Territorial Division corresponds to the simple average of the indicators obtained from the processes.

$$Quality\ indicator\ by\ territorial\ direction = \frac{\sum indicators\ (critic + capure)}{\#\ indicators\ (2)}\ X\ 100$$

The opportunity indicator is defined as the follow-up and control of the main activities that are part of the production, analysis and dissemination of results processes. This makes it possible to identify the causes that led to the delay in the schedule. The opportunity indicator is accompanied by action plans that ensure compliance of product delivery to the customer's satisfaction.

The opportunity indicator registers the activity; the individual responsible for the grading; the scheduled date; the actual date; the corresponding grade (1 for compliance and 0 for non-compliance); the grounds for unfulfillment; the action taken against the non-compliance; and the respective evidence.

4. DISCUSSION AND ANALYSIS OF RESULTS

4.1. STATISTICAL ANALYSIS

The indicators are observed considering averages and variances for each study domain. The population structure is analyzed from the distribution of frequencies and outliers are detected. An analysis of sensitivity to the statistical imputation processes is performed.

Likewise, non-sampling errors are examined, and other types of errors that do not depend of the selection of the sample are detected; such errors are those originated in the design of the questionnaire, directly from the source due to the misinterpretation of instructions for filling out the questionnaire, or on the part of the collector for a mistaken interpretation of the guidelines to fill out the forms, or due to conceptual deficiencies during capture, file management, generation of results, or in the handling of novelties by misallocation.

In that respect, the revision and consistency analysis of information by the logistics team in DANE Central is required, followed by the databases being made available to the economic thematic team. These databases are the place where a list of possible inconsistencies to be submitted to revision is generated.

4.2 CONTEXT ANALYSIS

In view of the fact that information on services of circumstantial type is very limited, the process of comparison of information with other sources and statistics is scanty. For this reason this process is only performed at total level, with the quarterly GDP and for some of the sections that are under study by the project.

The economic consistency of the research is complemented in different ways. Firstly the origin of the largest variations at company level and their contribution to the total sub-sector are established. Subsequently, the reasons for atypical growths are determined with the source and, if possible, a consistency analysis is carried out with the sectors for which services are rendered. Among the sectors that continuously demand different types of services we find: The hydrocarbons sector, financial sector, construction and civil works, the public sector, and, to some extent, the domestic and foreign trade industry.

In particular, contrast analysis is performed using different sectors measured by DANE, such as transport auxiliary and complementary activities with foreign trade and real estate activities with housing finance. In some cases, contrasts by specific service sectors or activities are difficult because their timing is different. For example, information on higher education has a six-month periodicity, whereas for the other sections the information is available on an annual basis, but the period is always lagging behind with respect to the one being studied by the QSS.

In telecommunications, a comparative analysis is performed between the figures provided by the Colombian Ministry of Information Technology and Communications (MinTIC for its acronym in Spanish) and the corresponding section. Likewise, the information on investment in advertising provided by ASOMEDIOS (a civilian non-for-profit trade association that promotes the development of the media sector in Colombia) is used to compare advertising activities with radio and television activities.

In all cases, the differences in coverage and thematic scope of the different measurements are taken into account, to ensure the degree of comparison of figures. For example, the information provided by the MinTIC is available at product level (Internet services, fixed and mobile telephone services, pay TV services, etc.), while the QSS measures total income earned by the companies providing these services.

Additionally, an analysis of results within the investigation itself is carried out with all the information available, in order to determine the sector’s evolution compared to that of the economy. There is an internal services team composed of experts in Logistics, Sample Designs, Economic Theme and the advice of the Technical Direction for the production and analysis of results. Moreover, there is an external committee with representatives from the Banco de la República (Central Bank), the National Planning Department (DNP), the Ministry of Commerce, Industry and Tourism, and the Ministry of Information Technology and Communications, who are permanently updated on the progress, delays, inconveniences and results of the investigation.

5. DISSEMINATION

5.1. DATA REPOSITORY MANAGEMENT

The investigations of the services sector use an application that enables on-line capture of information (via Website) by data entry and in real time, and thus, the information is stored directly on DANE's IT systems servers.

The processing of information of the complete survey is in SAS format and is stored on DANE's server (systema44).

5.2 DISEMMINATION PRODUCTS AND INSTRUMENTS

According to the sample design, the variations and subsequent indices are presented for consultation and dissemination; taking into account the total for the services sector disaggregated by section or activity and for the operating income and occupied personnel variables.

The information outputs are: Indices and annual year-to-date and twelve-month nominal variations, calculated for the national total geographical coverage and for the variables under study. The index base is the quarterly average of the year 2011. The results of the revision, the splice of additions, the calculation of indices at sub-sector and total levels, and the annual, year-to-date and twelve-month variations are generated using programs in SAS software.

The following are the output tables defined after the test pilot analysis and the questionnaire approved in committee:

A.1 Annual operating income variation, by income type.
A.2 Year-to-date operating income variation, by income type
A.3 Twelve-month operating income variation, by type of income
A.4 Annual variation of operating income by economic activity
A.5 Year-to-date operating income variation, by economic activity.
A.6 Twelve-month operating income variation, by economic activity.
A.7. Annual operating income variation by type of income and by section or activity.
A.8 Year-to-date operating income variation by type of income and by section or activity.
A.9 Twelve-month operating income variation by type of income and by section or activity
A.10. Annual variation of occupied personnel, by occupational category.
A.11 Year-to-date variation of occupied personnel, by occupational category.
A.12 Twelve-month variation of occupied personnel, by occupational category.
A.13 Annual variation of occupied personnel, by section or activity.
A.14 Year-to-date variation of occupied personnel, by section or activity
A.15 Twelve-month variation of occupied personnel, by section or activity.
A.16 Annual variation of occupied personnel, by occupational category and by section or activity.

A.17 Year-to-date variation of occupied personnel, by occupational category and by section or activity.
A.18 Twelve-month variation of occupied personnel, by occupational category and by section or activity.
A.19 Indices Series of the Quarterly Services Survey.

The dissemination of results is under the responsibility of the Direction of Diffusion, Marketing and Statistical Culture. The dissemination of the information on the different investigations conducted by Dane is carried out through the data banks that the entity has in different cities of the country.

Results have to be published on a quarterly basis, 60 days after the reference period, by means of a press release. Subsequently, the information can be accessed through electronic means, special publications, and statistical newsletters, and on DANE´s Web site.

6. RELATED DOCUMENTATION[18]

In order to develop the Quarterly Services Survey the following documentation is necessary:

Methodologies

Technical card of the investigation: Overview of the main aspects of the investigations.
Imputations methodology: Contains the design, definition and technical specifications of validation and imputation.
Statistical design methodology: Presents the type of statistical design used in the procedure and methodology of calculation of results.
Methodology for the calculation of the Verification Digit (DV for its acronym in Spanish): Explains the methodology to calculate the digit of verification of the NIT or ID card of the QSS sources.

Collection instruments

Quarterly Services Survey Questionnaire: The main and first instrument designed to obtain the information.
Questionnaire completion manual: A user's guide for companies with instructions on filling out the questionnaire.
Critical analysis manual: Working tool to help analysts or reviewers of the forms to establish data consistency.
System's manual: Describes the different modules that make up the QSS application
Administrative user manual: Tool that helps the systems administrator.
Manual for the handling of novelties: Describes the different statuses of a company at the time of data collection and the role of the different teams when facing each novelty.

Specifications

Consistency and validation specifications of the Quarterly Services Survey: Document that describes the variables studied by the Project and others that are estimated with the permitted characteristics and values, as well as the cross reference variables and chapters that serve as the basis for the design of the application.
Specifications of ranges of acceptance of the QSS: These specifications establish the permitted values and ranges that the variables can take, as well as the variations between periods. This document is basic for the design of the application.
Directory specifications: This directory lists and describes the variables that contain the directory file.
Output table specifications: Describes the output tables planned for dissemination of the results.
Analysis lists specifications: Describes the cross-reference information, variations and possible inconsistencies that should be submitted to revision by the Logistics team.

[18] Methodology, Collection Instruments and Specifications available on (in Spanish): http://danenet/danenetn/sistema_documental/index.php?option=com_content&task=category&sectionid=4&id=175&Itemid=494

GLOSSARY

Accrued social benefits: Common, special and/or agreed remunerations other than wages and salaries which the enterprise or employer is compelled to pay, including legal and extra bonuses, vacations, severance pay and interests on severance pay, contributions to social security (health, pension and occupational hazards), para-fiscal contributions (ICBF[19], SENA[20]and Family Compensation Funds) and all those items stipulated as social welfare payments in the Colombian Substantive Labor Code.

Annual variation: Percentage variation calculated between the reference period and the same period of the previous year.
(OECD, Data and Metadata Reporting and Presentation Handbook, 2007, Page 52 http://ec.europa.eu/eurostat/ramon/coded_files/OECD_data_metadata_report_handbook_EN.pdf)

Apprentice personnel: This refers to employees hired through apprenticeship contracts for a definite time, not exceeding two years, and who are granted a monthly allowance ranging between 50% and 100% of the minimum wage, according to their degree or level of training. (C.f. Article 30 Act 789 of 2002.)

Enterprise: An institutional unit in its capacity as a producer of goods and services. This is an economic agent with autonomy to adopt financial and of investments decisions and with the authority and responsibility to assign resources to the production of goods and services, and that is able to carry out one or several productive activities. The enterprise is the statistical unit for which financial statistics are compiled for the income and expenditures accounts and for the capital financing accounts, in the System of National Accounts – SCN (for its acronym in Spanish) (DANE, International Standard Industrial Classification ISIC Revision 3 A.C., 1998)

Expenses incurred for apprentices or students under agreement (with universities or technological/vocational education institutions): Expenses incurred for the maintenance support to the apprentices personnel, who receives a monthly payment as support for their maintenance that ranges between 50% and 100% of the minimum wage, depending on the level of education reached by them. If the apprentice is a university student, the monthly payment and the monthly maintenance support must not be less than 1 minimum monthly legal wage (MMLW). In any case, this support will not correspond to salary[21].

Expenses incurred for temporary personnel hired via third-party payroll service providers: Amount charged by companies specialized in providing temporary personnel to work exclusively in the economic unit. This amount includes administration fee charged by the company that provides this service.

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[19] ICBF – Colombian Institute for Family Welfare – Government entity dedicated to the development and all-round protection of early childhood, children and adolescents, as well as to the welfare of Colombian families.
[20] SENA - National Learning Service - Government agency chartered to provide vocational education to the Colombian workforce
[21] Article 30, Act 789 of 2002. Republic of Colombia.

Income: A value received by the enterprise in return for the services rendered to other enterprises and households. (EUR Lex – Fourth Council Directive 78/660/CEE of 25 July 1978, based on Article 54 (3)(g) of the Treaty on the annual accounts of certain types of companies.
http://unstats.un.org/unsd/publication/SeriesM/SeriesM_67rev1S.pdf)

Integral Salary: The integral salary may not be less than ten (10) times the minimum monthly wage, plus the benefits factor corresponding to the company, which shall not be less than thirty percent (30%) of that amount. The amount of the benefits factor is exempt from withholding tax (Substantive Labor Code)
http://www.secretariasenado.gov.co/senado/basedoc/codigo/codigo_sustantivo_trabajo_pr004.html

ISIC: The United Nations International Standard Industrial Classification of all economic activities. This is the classification for allocating companies' activities.

Net operating income: Total income earned for the provision of services, less discounts and price reductions. This includes the value generated by exports of services.

Occupied personnel: Personnel that works in the enterprise or establishment hired directly by it or through specialized companies; also the owners, partners and family without fixed remuneration.

Other revenue: This item covers revenues receivable by the unit from activities other than the sale of goods or the rendering of services, which are not always ascertainable at the establishment level. (United Nations, International Recommendations for Distributive Trade Statistics, Series M No. 89, 2010. Page 67.
http://unstats.un.org/unsd/publication/SeriesM/Seriesm_89e.pdf)

Working proprietors: These include all individual proprietors and partners actively engaged in the work of the establishment, excluding silent or inactive partners whose principal activity is conducted outside of the establishment. (International Recommendations for Industrial Statistics, Series M No. 90, 2008. Page 56. http://unstats.un.org/unsd/publication/seriesM/seriesm_90e.pdf)

Permanent employment: The average number of occupied persons with an undefined term contract. (Consider article 47 of the "Código Sustantivo del Trabajo" (Substantive Work Code)).

Remuneration: Total compensation or the sum of salaries, wages and social benefits earned by temporary personnel hired directly by the enterprise, or through other companies specialized in the provision of temporary personnel.

Sales of goods associated with the service rendered: Net income from the sale of goods related to the service rendered, i.e, those associated to the service rendered and that are performed by establishments that make up the enterprise.

Sales of other goods: Net income earned by the sale of other goods carried out by the company and due to other activities different to services (e.g. industrial, commercial, and other activities), without which the service offered can be provided anyway.

Services: Services are heterogeneous products generated every time they are requested, over which the user cannot establish ownership rights. Services cannot be traded separately from their production, nor transported or stored. It is sold the right to use a service whenever is required. (United Nations Organization, System of National Accounts, 1993, paragraph 6, 8.)

Group of activities developed by economic units towards the generation or making available a wide range of intangible products to households or enterprises. Services have a variety of features according to the needs of those who request them. (United Nations. International Standard Industrial Classification of All Economic Activities. ISIC, Rev. 4 A.C.)

Temporary occupied personnel: The average number of occupied personnel temporarily hired by the enterprise. In all cases the fixed-term labor contract has to be in writing and its duration cannot exceed three years. (cf “Código Sustantivo del Trabajo Colombiano” (Colombian Substantive Labor Code), Article46).

Temporary occupied personnel hired directly by the enterprise: Personnel hired on a fixed-term contract to carry out specific tasks for an agreed remuneration.

Temporary occupied personnel provided by specialized companies: Temporary personnel without any labor or contractual obligations with the enterprise or establishment, hired through companies specialized in the provision of personnel.

Unpaid family members: Unpaid family workers are defined as all persons living in the household of the proprietor(s) of the owning enterprise and working in or for the establishment, irrespective of the number of hours worked during the reference period, without regular pay (that is to say, without an agreed amount to be paid for work performed). Where it is customary for young persons, in particular, to work without pay in an economic enterprise operated by a related person who does not live in the same household, the requirement of “living in the same household” may be eliminated. Family workers who receive pay for work performed should be classified as employees. (c.f. Naciones Unidas, Recomendaciones Internacionales para las Estadísticas Industriales, Informe Estadístico, serie M 90, 2009. Pág. 62. http://unstats.un.org/unsd/publication/seriesM/seriesm_90e.pdf)

Variation last twelve months: Percentage change calculated between the last four quarters until the reference quarter and the same period of the preceding year.

Wages and Salaries Incurred: The total remuneration, fixed or ordinary, in cash or in kind, payable to the employee whether periodically or deferred, as compensation for the services provided to the business enterprise during the accounting period, before deductions such as social security contributions, taxes, unions or employees cooperatives. (United Nations, International Recommendations for Industrial Statistics, Statistical Report, Series M 48 Rev.1, 1984.page 41.
http://unstats.un.org/unsd/publication/SeriesM/SeriesM_48rev1S.pdf

Cumulative year-to-date variation: Percentage variation in the period between the start of the first quarter of the year until the present (reference) quarter, compared to the same period of the previous year.

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ANNEXES

ANNEX A. QSS Production Form

DEPARTAMENTO ADMINISTRATIVO NACIONAL DE ESTADÍSTICA
DANE

MUESTRA TRIMESTRAL DE SERVICIOS - MTS

TRIMESTRE DE REFERENCIA

IMPORTANTE: los datos que el DANE solicita en este formulario son estrictamente confidenciales y en ningún caso tienen fines fiscales ni pueden utilizarse como prueba judicial. Ley 79 de 1993, Art.5.°.

Actividad económica — USO EXCLUSIVO DEL DANE

Novedad — USO EXCLUSIVO DEL DANE

CAPÍTULO I - 1 - IDENTIFICACIÓN

Número de orden — USO EXCLUSIVO DEL DANE

NIT 1 C.C. 2 C.E. 3

No. ______ D.V. ______

Registro mercantil/entidad sin ánimo de lucro/de proponentes

Matrícula/registro 1 Renovación 2

Cámara ______ inscripción/matrícula ______

2 - UBICACIÓN Y DATOS GENERALES

1. Razón social de la empresa ______
2. Nombre comercial ______ 3. Sigla ______
4. Domicilio principal o dirección de la gerencia ______ LGGR
5. Municipio ______ 6. Departamento ______
7. Teléfono ______ 8. Fax ______ 9. A.A. ______
10. Dirección para notificación ______ LGPN
11 Municipio ______ 12. Departamento ______
13. Teléfono ______ 14. Fax ______ 15. A.A. ______
16. Correo electrónico (E-mail) ______ 17. Web ______

3 - ACTIVIDADES ECONÓMICAS

Describa, en orden de importancia, las principales actividades económicas	CIIU Rev.3 A.C. (4 dígitos)	Porcentaje de ingresos totales
1.		
2.		
3.		
4.		
5. TOTAL INGRESOS CAUSADOS EN EL TRIMESTRE (la suma del porcentaje no debe ser mayor a 100%)		

ANNEX A. QSS Production Form (Conclusion)

CAPÍTULO II - MOVIMIENTO EN EL TRIMESTRE DE LOS ESTABLECIMIENTOS QUE CONFORMAN LA EMPRESA

Número de establecimientos de este informe

1. Iniciales (+)		2. Apertura en el trimestre (+)	
3. Cierre del trimestre (-)		4. Total al final del trimestre (=)	

CAPÍTULO III - INGRESOS NETOS OPERACIONALES Y NO OPERACIONALES CAUSADOS (en miles de pesos)

Numeral 1. Valor de los ingresos según tipo (En los valores parciales no incluya impuestos indirectos)

Conceptos	Total ingresos
1. Ingresos por servicios prestados por la empresa	
2. Venta de mercancías asociadas a la prestación del servicio	
3. Venta de otras mercancías	
4. Otros ingresos netos operacionales no solicitados antes (especifique en observaciones)	
5. Total (sume renglones 1 al 4)	MILES DE PESOS
6. Total impuestos indirectos causados	
7. Ingresos no operacionales (especifique en observaciones)	

Numeral 2. Porcentaje de los ingresos operacionales según cliente

1. Empresa pública ____ % 2. Empresa privada ____ % 3. Hogares ____ % 4. Total 100 %

Impreso en la Dirección de Difusión, Mercadeo y Cultura Estadística del DANE

CAPÍTULO IV - PERSONAL OCUPADO, SUELDOS, SALARIOS Y PRESTACIONES CAUSADOS EN EL TRIMESTRE

Tipo de vinculación	Número de personas (promedio trimestral)	Causados en el trimestre (en miles de pesos)	
		Sueldos y salarios causados	Prestaciones sociales causadas(incluya aportes)
1. Propietarios socios y familiares sin remuneración			
2. Permanentes (contrato a término indefinido)			
3. Personal temporal contratado directamente por la empresa			
4. Personal temporal en misión en otras empresas (sólo para empresas temporales)		MILES	Salarios y prestaciones del temporal en misión
5. Temporales contratados a través de otras empresas		DE	Valor cobrado por estas empresas
6. Aprendices y pasantes		PESOS	Valor apoyo de sostenimiento
7. Total (sume renglones 1 al 6)			