MANAGING THE CPI AND PPI PROCESSES UNDER ISO 9000

Instituto Nacional de Estadística y Geografía

México

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Outline

- Introduction
- Quality management system
- Process approach
- Documental structure
- Continual improvement
- Analysis tools
- Quality policy
Introduction

According to the provisions of article 59, subparagraph III, of the law on the national system of statistical and geographic information (LSNIEG), published in the official journal of the Federation on 16 April 2008, INEGI is exclusive to develop the national consumer and producer prices indexes. This attribution entered into force on July 15, 2011. The Bank of Mexico certified the process of generation of price indices. The INEGI, continued with the certification of the process of generation of price indices and added to the quality management system, the process for the generation of purchasing power parities prices studies, sponsored by OECD.
Quality Management System

What is a quality management system?

A quality management system enables us to control processes and the interrelationship between them through operational controls that guarantee the quality of the generated product and promoting the continuous improvement of the system.

What is ISO?

The International Organization for standardization or ISO is a network of institutes of national standards from 164 countries, on the basis of one member per country, with a Central Secretariat in Geneva, that coordinates the system. Developed by ISO standards are voluntary, understanding that ISO is a non-governmental organization and does not depend on any other international body, therefore has no authority to impose its rules on any country.
Quality Management System

Why choose a quality management system based on ISO?

The ISO-based quality management system emphasizes the importance of:

a) Understanding and compliance with requirements
b) The need to consider processes in terms that add value
c) Results from the performance and efficiency of the process; and
d) The continuous improvement of processes based on objective measurements

Enables the controlled processes certification by the standard ISO 9001:2008
Diagram of the interaction between the processes of the QMS of the address General Deputy of price indexes

1. **Management responsibility**
2. **Provision of resources**
3. **CPI and PPI elaboration**
   - CPI and PPI methodology design
   - Information compilation, verification and sending
   - Information Analysis and Criticism
   - Calculus
   - Revision and Authorization
3.1 **PPP studies elaboration**
   - Study preparation
   - Market research
   - Prices collection
   - Validation
   - Revision and Authorization
4. **Measurement, analysis and improvement processes**

**Inputs**
1. Customer requirements
2. Product requirements
3. Applicable Regulations
4. International recommendations
5. México national account system
6. Generics weights
7. Geographic and economic covering
8. Number of collected CPI and PPI prices
9. Calculus formula
10. Goods and services classification
11. CPI database
12. OECD requirements

**External processes**
- Administrative direction from DGEE (DA)
- Deputy DG of (DGAI)
- Information and communication technology direction (DITIC)
- Regional Directions
- State coordination's
- Deputy DG of economic studies
- OECD
- ENIGH

**Operative processes**
- QMS processes

Customers
- INEGI
- Presidency
- DGEE
- OECD

Satisfaction

Continual improvement

Process approach
Documental structure

1. Quality policy
2. QMS manual
3. Quality Plans
4. Procedures
5. Work instructions
6. Operative manuals
7. Records

MC-01
- Quality Management System Manual
- ANNEX I. QMS documents list
- ANNEX II. Responsibilities matrix
- ANNEX III. Offices Distribution
- ANNEX IV. Organizational structure
- ANNEX V. Quality policy
- ANNEX VI. Quality objectives
- ANNEX VII. Terms and definitions
Documental structure

- Quality policy
- QMS manual
- Quality plans
- Procedures
- Work instructions
- Operative manuals
- Records

<table>
<thead>
<tr>
<th>PC-01</th>
<th>CPI quality management</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC-02</td>
<td>PPI quality management</td>
</tr>
<tr>
<td>PC-03</td>
<td>DGAIP quality management</td>
</tr>
<tr>
<td>PC-04</td>
<td>Contingency</td>
</tr>
<tr>
<td>PC-05</td>
<td>PPI new base</td>
</tr>
<tr>
<td>PC-06</td>
<td>PPP quality</td>
</tr>
<tr>
<td>PC-07</td>
<td>CPI new weights quality</td>
</tr>
</tbody>
</table>
# CPI Management Plan

<table>
<thead>
<tr>
<th>Process: CPI calculus</th>
<th>Client: INEGI’s President Economic Statistics General Director</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process responsible:</strong> CPI Sub directors</td>
<td><strong>Characteristics Result:</strong> Opportunity in delivery time.</td>
</tr>
<tr>
<td><strong>Process Result:</strong> Monthly Press Bulletin (FO-017), Fortnightly Press Bulletin (FO-016), Fortnightly information of national price index sent for publication (FO-041), Monthly information of national price index sent for publication (FO-042). Average pricing sent for publication (FO-043), Chaining (FO-070) and Expansions and eliminations (FO-071) Update of the economic information bank (BIE)</td>
<td><strong>Result</strong> Specific prices file for Price Investigator (PI)</td>
</tr>
<tr>
<td><strong>Infrastructure:</strong> Places to work, Computer equipment (with software according activities), Telephone service, Internet, e-mail, Outlook</td>
<td><strong>Activity No. 1</strong> Compilate, investigate, analyze, capture and send prices information.</td>
</tr>
<tr>
<td><strong>Labor environment:</strong> adequate lighting</td>
<td><strong>Responsable</strong> Prices Investigator (PI)</td>
</tr>
</tbody>
</table>

## I. Required resources
- 81 Prices Investigators (sharing with PPI), 11 PI exclusive for CPI and 4 Flying Investigators to cover PI’s absences.
- 2,600 letter size sheets monthly; two toner cartridges annually by price investigator (shared with PPI)
- Computer resources will be considered in the following way: 1 computer by PI; 1 printer, 1 scanner, and 1 phone by city. In the specific case of the Mexico City metropolitan Area, the PI will have 2 printers and a multifunctional.  

**Indicator:** Opportunity: That the publication of the news release is exactly at 8:00 of the day after which was presented to the Economic Statistics General Director.

Comparison of weighting tables and results. See picture of our quality objectives in MC-01
I.1 Risk analysis
All processes or sub-processes involved in the elaboration of national Price Indices, which are listed below are considered critical to be able to comply in time and form the mandate of law.

Likewise, an analysis of different points of risk to which they are exposed critical processes, is done, such as.
1. Personal
2. LAN net
3. Internet
4. Web service
5. Servers
6. Computers: PC or Laptop
7. Electrical service
8. Telephony
9. Computer services (email, communicator, VPN)
10. Printers
11. Prices Systems
12. Robbery or loss (information / Work team)
13. Fire
14. Information security
15. Changes of social order
16. Natural disasters
Documental structure

- **Quality policy**
- **QMS manual**
- **Quality plans**
- **Procedures**
- **Work instructions**
- **Operative manuals**
- **Records**

<table>
<thead>
<tr>
<th>PR</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR-01</td>
<td>Quality System review</td>
</tr>
<tr>
<td>PR-02</td>
<td>Control of documents and records</td>
</tr>
<tr>
<td>PR-03</td>
<td>Review of requirements related to the product</td>
</tr>
<tr>
<td>PR-07</td>
<td>Identification and traceability</td>
</tr>
<tr>
<td>PR-08</td>
<td>CPI Computing</td>
</tr>
<tr>
<td>PR-09</td>
<td>PPI Computing</td>
</tr>
<tr>
<td>PR-10</td>
<td>CPI control of nonconforming product</td>
</tr>
<tr>
<td>PR-11</td>
<td>Corrective and preventive actions</td>
</tr>
<tr>
<td>PR-12</td>
<td>Annex I. Identification and improvement areas manual</td>
</tr>
<tr>
<td>PR-13</td>
<td>Statistical techniques</td>
</tr>
<tr>
<td>PR-14</td>
<td>Internal audit</td>
</tr>
<tr>
<td>PR-15</td>
<td>Competence for personnel performing</td>
</tr>
<tr>
<td>PR-16</td>
<td>Annex I. Personnel performing model</td>
</tr>
<tr>
<td>PR-17</td>
<td>PPI control of nonconforming product</td>
</tr>
<tr>
<td>PR-18</td>
<td>for the production of studies of prices of goods and services of household consumption</td>
</tr>
<tr>
<td>PR-23</td>
<td>PPP control of nonconforming product</td>
</tr>
</tbody>
</table>
Documental structure

Quality policy
QMS manual
Quality plans
Procedures
Work Instructions
Operative manuals
Records

| IT-01  | For elaboration, updating, content and format of documents |
| IT-02  | CPI Price collector                                      |
| IT-05  | Documents dissemination                                  |
| IT-08  | Hotels calculation                                       |
| IT-10  | Education calculation                                    |
| IT-13  | Renting calculation                                      |
| IT-15  | Electricity calculation                                   |
| IT-16  | Highways calculation                                     |
| IT-17  | Cars insurance calculation                               |
| IT-19  | Telephone service calculation                            |
| IT-22  | Prices chain linking                                     |
| IT-32  | PPI price collectors                                     |
| IT-33  | Work for the analysis and critique of the information used in the preparation of PPI |
| IT-34  | Farming and fishing calculation                          |
| IT-36  | PPI goods, construction and services calculus            |
| IT-49  | PPI subsistems determination                             |
| IT-53  | Quality adjustmenten computers calculation               |
| IT-57  | General rules for “Transport, Restaurants and Hotels price survey, Round 2014”, information picking |
Documental structure

- Quality policy
- QMS Manual
- Quality plans
- Procedures
- Work Instructions
- Operative manuals
- Records

<table>
<thead>
<tr>
<th>MP</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP-01</td>
<td>Price collector for the management of the PPI system</td>
</tr>
<tr>
<td>MP-02</td>
<td>Price collector for the handling of the capture system of the CPI</td>
</tr>
<tr>
<td>MP-03</td>
<td>Quick Guide to the capture of prices in the Federal District</td>
</tr>
<tr>
<td>MP-04</td>
<td>Information systems operative continuation</td>
</tr>
<tr>
<td>MP-05</td>
<td>PPI methodological document</td>
</tr>
<tr>
<td>MP-06</td>
<td>CPI methodological document</td>
</tr>
<tr>
<td>MP-07</td>
<td>Price system for PPP EUROSTAT-OECD program</td>
</tr>
</tbody>
</table>
Documental structure

- Quality policy
- QMS manual
- Quality plans
- Procedures
- Work instructions
- Operative manuals
- Records
Relationship between business processes and documents

**INPUTS**
1. Customer requirements
2. Product requirements
3. Applicable Regulations
4. International recommendations
5. México national account system
6. Generics weights
7. Geographic and economic covering
8. Number of collected CPI and PPI prices
9. Calculation formula
10. Goods and services classification
11. CPI data base
12. OECD requirements

**PRODUCTS**
- Consumer Price Indices (CPI)
- Producer Price Indices (PPI)
- Purchasing power parity studies (PPP)

**QUALITY MANAGEMENT SYSTEM (QMS) processes**
- Continual improvement
- Requirements

**EXTERNAL PROCESSES**
- Administrative direction from DGEE (DA)
- Deputy DG of DGAI
- Information and communication technology direction (DTIC)
- Regional Directions
- State coordination's
- Deputy DG of economic studies
- OECD
- ENIGH

**INSTITUTO NACIONAL DE ESTADÍSTICA Y GEOGRAFÍA**

**PRODUCTS**
- Consumer Price Indices (CPI)
- Producer Price Indices (PPI)
- Purchasing power parity studies (PPP)
## Relationship between business processes and documents

### ISO 9001:2008 Requirements | QMS Document

<table>
<thead>
<tr>
<th>7</th>
<th>Product realization</th>
</tr>
</thead>
</table>
| 7.1 | Planning of product realization | PC-01 CPI quality management plan  
|   |   | PC-02 PPI quality management plan  
|   |   | PC-06 PPP quality plan |
| 7.2 | Customer-related processes |
| 7.2.1 | Determination of requirements related to the product | PR-03 Review of requirements related to the product |
| 7.2.2 | Review of requirements related to the product |
| 7.2.3 | Customer communication | MC-01 Quality Management System Manual |

### (3) CPI and PPI elaboration

1. CPI and PPI methodology design
2. Information recompilation, verification and sending
3. Information Analysis and criticism
4. Calculus
5. Revision and Authorization

### (3.1) PPP studies elaboration

1. Study preparation
2. Market research
3. Prices collection
4. Validation
5. Revision and Authorization

### (2) Provision of resources

1. DGEE (DA)
2. Deputy DG of (DGAI)
3. Information and communication technology direction (DTIC)
4. Regional Directions
5. State coordination's

### (4) Measurement, analysis and improvement processes

- QMS processes
- Operative processes
Information Analysis and criticism
Calculus
Revision and Authorization

(3) CPI and PPI elaboration

(3.1) PPP studies elaboration

ISO 9001:2008 Requirements

<table>
<thead>
<tr>
<th>7.3 Design and development (excluding PPP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.3.1 Design and development planning</td>
</tr>
<tr>
<td>7.3.2 Design and development inputs</td>
</tr>
<tr>
<td>7.3.3 Design and development outputs</td>
</tr>
<tr>
<td>7.3.4 Design and development review</td>
</tr>
<tr>
<td>7.3.5 Design and development verification</td>
</tr>
<tr>
<td>7.3.6 Design and development validation</td>
</tr>
<tr>
<td>7.3.7 Control of design and development changes</td>
</tr>
</tbody>
</table>

QMS Document

External processes:
- Administrative direction from DGEE (DA)
- Deputy DG of DGAI
- Information and communication technology direction (DTIC)
- Regional Directions
- State coordination's

Customers
- INEGI Presidency
- DGEE
- OECD

Requirements
Continual improvement

Relationship between business processes and documents

PRODUCTS
- Consumer Price Indices (CPI)
- Producer Price Indices (PPI)
- Purchasing power parity studies (PPP)

(1) Management responsibility

(2) Provision of resources
ISO 9001:2008 Requirements

<table>
<thead>
<tr>
<th>Requirements</th>
<th>QMS Document</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5 Production and service provision</td>
<td>7.5.1 Control of production and service provision</td>
</tr>
<tr>
<td>CPI and PPI Calendars</td>
<td>IT-02 CPI Price collector</td>
</tr>
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<td>MP-01 Price collector for the management of the PPI system</td>
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<td>IT-17 Cars insurance calculation</td>
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<tr>
<td>IT-19 Telephone service calculation</td>
<td>IT-34 Farming and fishing calculation</td>
</tr>
<tr>
<td>IT-36 PPI goods, construction and services calculus</td>
<td>IT-49 PPI subsystems determination</td>
</tr>
<tr>
<td>IT-53 Quality adjustment computers calculation</td>
<td>IT-03 CPI Supervisor</td>
</tr>
<tr>
<td>PR-13 Statistical techniques</td>
<td></td>
</tr>
</tbody>
</table>

(3) CPI and PPI elaboration

(3.1) PPP studies elaboration

(4) Measurement, analysis and improvement processes
Continual improvement

QMS continual improvement, is based on

- Quality policy
- Quality objectives
- Auditing results
- Analysis of data
- Corrective actions
- Preventive actions; and
- Management review
Continual improvement

Objectives referred to quality policy
To elaborate reliable, representative and timely indices.
Continual improvement

Objectives referred to Quality Management System

Customer satisfaction result

Implemented improvements

Corrective actions % of attention
Continual improvement

Objectives referred to operative processes performance

**CPI nonconforming product**

**PPI nonconforming product**

**Implemented preventive actions**
Continual improvement

Improvement actions at Deputy DG of Price Indices

Continual improvement has been progressively in the DGAIP. Just six months after implemented the quality management system, in December had implemented six improvements for the verification of the results of the CPI before its broadcast, the most important, was the creation of an alternate application to check the partial results that throws the system of calculation of the CPI.

19 Improvement actions were implemented in the year 2012. To the creation of tools for the dissemination of information, should be mentioned because of its relevance as these served as the basis for which will be incorporated in 2013 in the dissemination of the studies of purchasing power parities.
Continual improvement

Improvement actions at Deputy DG of Price Indices

The improvements related to dissemination tools were: the elaboration of the inflation calculator, Kaleidoscope, dynamic graphics, map of prices, consultation of average prices and inflation Simulator.

Likewise in 2012 it should highlight the inclusion of the design of the CPI and the process of purchasing power parities to quality management system.

In 2013, we have registered 23 improvements, which are the inclusion of the design of the CPI to the quality management system, as well as the generation of a comprehensive system to capture and calculate the national indexes of prices and purchasing power parities studies.
Continual improvement

Methodological improvement

They should be mentioned among the most important improvements that have been incorporated in the quality management system:

- Update the weights without change of base year for CPI

- Change of base year to June 2012 for PPI
CONSUMER PRICE INDICE

**Analysis tools**

**October 2013**

**General variation** 3.36%

### Food, beverages and tobacco
**Variation** 23.1%

### Housing
**Variation** 28.5%

### Health and personal care
**Variation** 7.3%

### Education and recreation
**Variation** 3.46%

### Furnishing, household equipment and domestic accessories
**Variation** 0.81%

### Transport
**Variation** 6.52%

### Other services
**Variation** 3.53%

### Clothing, footwear and accessories
**Variation** 1.62%

### Anual Variations

- Less variation
- 0.8%
- 2.3%
- 4%
- 11.6%
- 19%
- 33%
- 45%

- Most variation

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[Kaleidoscope](http://www.inegi.org.mx/est/contenidos/Proyectos/INP/Caleidoscopio.aspx)
Analysis tools

Dynamic chart

Analysis tools

Inflation simulator

Introduction to the simulator use

1. In the section on the left, you can enter your average monthly expenses in pesos or in percentage, for each of the 8 groups. If you wish you can open each group (by clicking on the plus sign) and enter your expenses at the level of the subgroups (36) and even do it at the level of generic (283).

2. You can open all groups to generic level by clicking the EXPAND ALL option that appears in the left pane, or can see only 8 groups by clicking the COLLAPSE ALL option.

3. You can see the summary of expenditures entered on the DATA tab.

4. The result of the simulation can be comparatively with the CPI for each of the 8 groups under the GRAPHICS tab.

5. If desired can load predefined eyelashes simulations: EXAMPLE 1, EXAMPLE 2 AND EXAMPLE 3.

Quality Policy

Develop national index of prices to the consumer and producer, as well as studies of prices program of parities of power purchase, **Reliable, Representative and Timely**, using recognized methodologies and the continuous improvement of the processes, in order to meet the demands of statistical information of its customers.
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