



Measuring ICT use by businesses in Brazil: The Project of the Brazilian Institute of Geography and Statistic (IBGE)

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General objective of the Brazilian ICT Business Project

The general purpose of the Brazilian Business ICT Project is the accomplishment of a survey on access and use of the information and communication technologies (ICT) for the businesses in the country

The adopted concepts and methodology and the operational characteristics of the survey are referred to the international recommendations and aim at to respond not only the national private and public demands, but also the international ones for this kind of information (core indicators).

Objectives of the ICT Business Survey

- To analyze the access and use of businesses to information and communication technologies
- To analyze the main ICT services used by Brazilian businesses
- To evaluate the main barriers for the use of ICT technologies by Brazilian businesses
- To identify the reasons of non utilization of ICT technologies by Brazilian businesses

Main characteristics of the ICT Survey

- The ICT business survey is a stand-alone survey
- The ICT business survey is conceived as a probabilistic sample survey for businesses in selected economic activities
- The business register which will be the reference for the selection of the sample of the ICT survey is originated from the Central Business Register of IBGE- CEMPRE. The ICT survey is going to use a sub-sample from the samples defined for the accomplishment of the annual businesses surveys for the reference year of 2010: manufacturing, commerce, services and construction

Main characteristics of the ICT Survey

- The data collection will be carried out in the whole country through telephone interview assisted by computer (CATI) with the persons indicated by the businesses or through personal interview, for the big or complex businesses
- The data collection period corresponds to the first semester of 2011
- The survey reference period is the year of 2010 and the reference date December, 31st 2010
- The unit of investigation of the survey is the business (enterprise)

Methodological framework

- The methodological framework proposed for the IBGE ICT survey is based on the *Manual for the Production of Statistics on the Information Society*, 2009 prepared under the coordination of UNCTAD
- IBGE has included in the questionnaire other relevant questions for the country. Statistics on the extension of enterprises digital divide is a valuable information to the country to better define its ICT investment politics and progress in the democratization of the use of the Internet. It is supposed that one of the main reasons for the non use of ICT by the enterprises is the lack or the poor quality of communication infrastructure in many counties

Methodological framework

- Besides the question of the digital divide it was also taken in account the chance of including in the ICT survey questions on security procedures adopted by businesses and on training and qualification they offer to improve the abilities of their staff in the development and use of IT and ICT

Methodological issues

Unit of investigation – Business (or enterprise) - formally constituted, classified in one of the economic activities included in the survey scope

Respondent - person responsible for the management of IT or ICT activities in the business, such as the director, coordinator or manager of IT area, technological consultant (person who develops IT activities and influences the business decisions on technology). It can be the business owner, in the case of small businesses.

Methodological issues

One of the most relevant phases of the survey is the identification of the respondent who is more suitable to answer the survey questionnaire and the appointment of the interview time slot with this person, to answer by telephone the requested information

Methodological issues

Target population

For the determination of the target population of the ICT business survey, four dimensions have been considered:

1. Economic activity of the business (according to the National Classification of Economic Activities - CNAE version 2.0 (referred to ISIC 4))
2. Legal nature of the business in the survey
3. Size of the businesses (according to number of occupied persons)
4. Geographical location

Methodological issues

Scope of activities

Corresponds to the businesses (enterprises) with 1 or more occupied persons in the following sections of CNAE 2.0:

Section B: Mining and quarrying

Section C: Manufacturing

Section F: Construction

Section G: Trade; repairing of vehicles and motorcycles (except ambulant commerce and other types of retailing trade)

Section H: Transport, storage and post office (except space transport)

Section I: Accommodation and food service activities

Section J: Information and communication

Section L: Real estate activities

Methodological issues

Coverage

Section M: Professional, scientific and technical activities (except notary's offices, enterprises headquarters, administrative local units, research and experimental development in physical and natural sciences, research and experimental development in social and human sciences and veterinarians activities)

Section N: Administrative and support service activities (except building condominiums)

Section R: Arts, culture, sport and recreation (except activities related to the cultural and ambiental patrimony and social and sportive clubs)

Section S: Other Service Activities (activities of membership organizations)

Methodological issues

Sections (CNAE 2.0)	Occupied Persons					
	Total	1 - 10	11 - 100	101 - 250	251 - 500	501 and more
Total	1,485,351	1,269,277	194,715	12,922	4,529	3,908
Mining and quarrying	9,050	6,979	1,920	98	28	25
Manufacturing	370,606	275,218	86,176	5,638	1,902	1,672
Construction	73,208	55,408	15,114	1,706	582	398
Trade; repairing of vehicles and motorcycles	442,585	401,154	39,015	1,764	433	219
Transport, storage and post office	151,250	133,526	15,278	1,287	591	568
Accommodation and food service activities	29,887	22,588	7,071	161	48	19
Information and communication	87,796	81,158	6,048	345	120	125
Real estate activities	28,914	26,824	2,001	71	10	8
Professional, scientific and technical activities	157,975	148,805	8,602	346	116	106
Administrative and support service activities	79,787	6,581	11,045	1,476	695	761
Arts, culture, sport and recreation	11,638	11,353	280	3	1	1
Other service activities	42,655	40,454	2,165	27	3	6

Methodological issues

Sample Design

- Stratified sample design
- Stratification variables: industry classification and employment sizeband
 - Size of businesses (occupied persons)
 - 1 to 9
 - 10 to 19
 - 20 to 49
 - 50 to 499
 - 500 or over occupied persons

Methodological issues

- Definition of the sample design also took into account the spacial distribution of businesses :
 - (in each stratum) selection procedure was devised to spread out the sample over the country
- Sample size was determined to provide estimates of total occupied persons in each stratum with controlled precision (relative standard error $\leq 12.5\%$)

Methodological issues

- **Overall sample size** : $n = 20,000$ businesses
- **Sample allocation**:
 - Take-all stratum contains the large businesses (500 or over occupied persons): $n = 6,000$ businesses
 - Take-some strata (sampling units with less than 500 occupied persons): $n = 14,000$ businesses

Methodological issues

Data collection and periodicity

- **Brazilian ICT Business Survey** – is a stand-alone survey

Proposed Periodicity for ICT Business survey in the Program of Economic Surveys: every two years, one year Innovation Survey and in the other ICT access and use survey

- **Brazilian ICT household survey** - is a module survey in the annual Household Sample Survey

Periodicity: every three years

Methodological issues

Variables

Organized in six modules, defined according to the following criteria:

- To provide information for the construction of the core indicators defined in the meetings of the Partnership on Measuring ICT for Development
- To follow the international recommendations on this subject, in special, the ones presented in the Manual for the Production of Statistics on the Information Economy - 2009, prepared by the United Nations Conference on Trade and Development – UNCTAD

Methodological issues

- To include some questions contained in questionnaires of ICT Enterprises surveys of other countries, for example, Australia and Spain (which includes the Eurostat recommendations) and in the questionnaire of the Brazilian Internet Steering Committee – CGI Br, which were considered relevant for the understanding of ICT use and access in the Brazilian business (enterprises)
- To identify the barriers that avoid businesses to access the Internet

Methodological issues

Module A: General information about use of ICT by businesses

1. Business which had used computers (Core Indicator B1)
2. Employed persons, in the business, who had used computers (Core Indicator B2)
3. Business staff specialized in IT/ICT
4. Business which had an Intranet (Core Indicator B6)
5. Business which had a local area network (LAN) (Core Indicator B10)
6. Business which had an Extranet (Core Indicator B11)
7. Business which had used cloud computing
8. Business which used free computer systems
9. Business who had corporative mobile telephone for business use

Methodological issues

Module B: Businesses which has not used computers

- 1 – Reason(s) for the non use of computers by businesses

Module C: Access and use of the Internet

- 1 - Businesses which had accessed the Internet ([Core Indicator B3](#))
- 2 - Businesses which had a web presence (homepage or website) ([Core Indicator B5](#))
- 3 - Available activities in the Internet pages of the businesses
- 4 - Employed persons in the businesses who had used the Internet ([Core Indicator B4](#))
- 5 - Types of technologies used by the businesses to access the Internet ([Core Indicator B9](#))

Methodological issues

Module C: Access and use of the Internet (continuation)

7. Businesses which had carried out sales of merchandises and services through the Internet ([Core indicator B7](#))
8. Businesses which had carried out purchases of merchandises or services through the Internet ([Core Indicator B8](#))
9. Businesses which had used the Internet to interact with governmental agencies, according to the type of the service requested ([Core Indicator B12](#))
10. Other activities used by businesses through the Internet ([Core Indicator B12](#))

Module D: Security measures in the use of the ICT

1. IT Security procedures used by the businesses

Methodological issues

Module E: ICT abilities

1. Businesses which had provided training/qualification to its staff to develop or to improve ICT abilities
2. Type of training/qualification provided by the businesses
3. Businesses which had hired or had tried to hire specialized staff in IT/ICT
4. Difficulties pointed out by businesses for hiring staff specialized in IT/ICT

Module F: Reasons for businesses not to access the Internet

1. Reasons for businesses non access to Internet

Operational Issues

ICT Brazilian Survey Questionnaire

ICT Business survey will use an electronic questionnaire to be used in a telephone interview (CATI) in scheduled day and hour.

The survey has two phases:

1. scheduling operation
2. interviewing operation

Collection

The data collection will be carried out by the Data Collection Center of IBGE, located in the City of Rio de Janeiro, through a Computer Assisted Telephone Interview.

Operational Issues

Pilot Test

Period: July of 2010

Respondents: 1,200 businesses selected according to size of occupied persons

To test:

- scheduling operation
- size of the questionnaire
- questions
- length of interview
- computer systems

Operational Issues

Editing procedures

- **Data entry** - carried out at the moment of the interview
- **Consistency** - individual editing in businesses questionnaires
- **Aggregated data** – aggregated data by businesses size and economic activity
- **Analysis of the results** – the performance of ICT business with regard to the macroeconomic scenario

Dissemination of Results

IBGE intends to publish the results in 12 months after the beginning of the data collection.

For the businesses with 10 and more occupied persons information will be published for each of the CNAE sections in the scope of the survey.

Dissemination of Results

For the small businesses (1 to 9 occupied persons) the results will be published for groups of economic activities, such as:

- Manufacturing, Mining and quarrying and Construction
- Trade
- Information and Communication
- Other Activities of Services, in the scope

Dissemination of Results

Dissemination Strategy

Printed publication – Methodological aspects, tables of results and analysis of results

CDRom – Methodological characteristics aspects, tables of results, analysis of results, methodological documents

Internet – Methodological characteristics aspects, tables of results and analysis of results

Study on ICT Business

The results of ICT survey will be linked to the results of the annual business surveys providing an evaluation of the effect of the use of the ICT by businesses. Some topics that will be presented:

- Value added, Income and costs
- Job and wages
- Productivity
- Investments

Stakeholders Related to the Information Society in Brazil

- **IBGE** – ICT household survey and ICT Sector
- **Ministry of the Communications** – ICT Infrastructure
- **Ministry of Science and Technology** - Studies on the ICT infrastructure and technologies
- **Brazilian Internet Steering Committee** – ICT business survey and ICT household survey
- **SOFTEX** – The Information System of Brazilian Industry of Software and Services

**Thank you
for
your attention**

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