Tuesday
19 March

Session 4: Quality of Service

There is near unanimous agreement that quality of service indicators are important but there are methodological problems in their use for meaningful comparisons. What quality of service statistics are in use, what are their limitations and can a core set of indicators be agreed on? What about customer satisfaction indexes—do they mean anything to anyone but an operator?

"Quality of service indicators"
S. Paltridge, OECD

"Customer Satisfaction Index"
C. Almeida, TeleBras, Brazil

Workshop 1: Costructing Tariff Models

A hands-on approach covering the ingredients for making tariff comparisons.

INTERNATIONAL TELECOMMUNICATION UNION

TELECOMMUNICATION DEVELOPMENT BUREAU

INFORMATION SYSTEMS UNIT

Document WTIM96/24-E
19 March, 1996
Original: English

World Telecommunication Indicators Meeting
(Geneva, 19 - 21 March 1996)

SOURCE: OECD, Sam Paltridge

TITLE: TELECOMMUNICATION QUALITY OF SERVICE STATISTICS

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Telecommunication Quality of Service Statistics

ITU World Telecommunication Indicators Meeting

Sam Paltridge

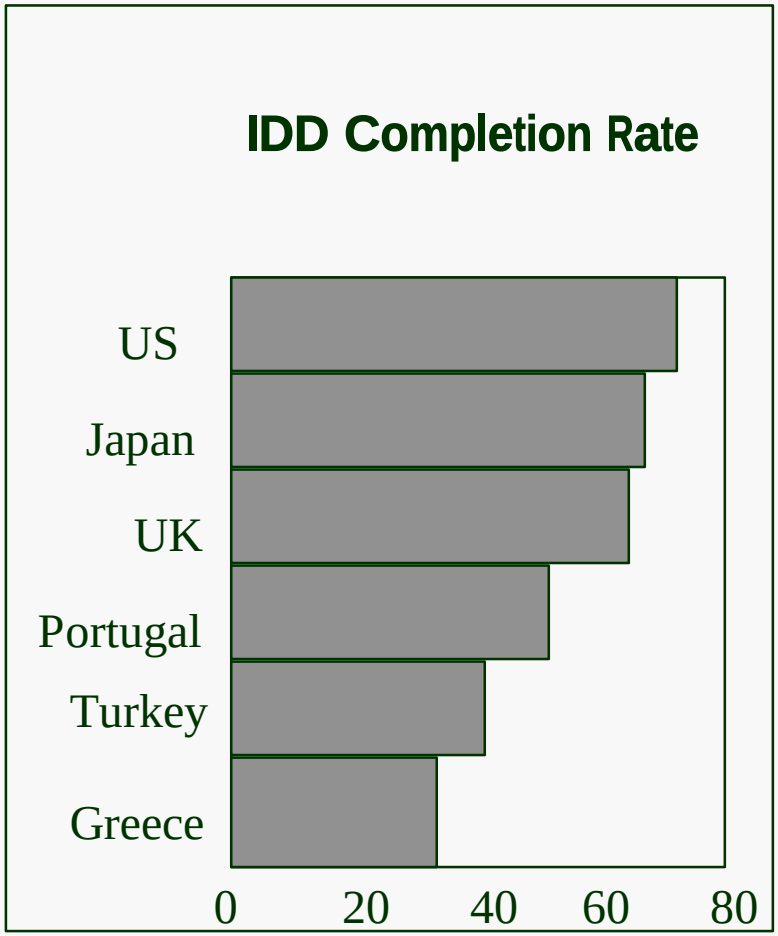
OECD

Telecom Information http://www.oecd.org/dsi/sti_ict.html

- **Communications Outlook**
  - Regulation
  - Services market
  - Network dimensions & development
  - Telecommunication tariffs
  - Employment and productivitz
  - Trade in telecommunication equipment
  - Patents/Telecommunication Aid
  - **Quality of service (Chapter 6)**

Why Measure Quality of Service?

- Monitor and Improve Customer Service
- PTO Service Guarantees
- PTO International Benchmarking
- Inform regulatory process
  - Price Controls
  - Cosumer Complaints
- Comparative Policy Analysis



Who Measures Quality of Service?

- PTOs
  - » Routine Network and Business Reporting
  - » Customer satisfaction/retention surveys
- Independent surveys
  - » Regulators
  - » Customers (e.g. INTUG)
  - » Other PTOs
  - » Network surveys (e.g. Internet)

Examples of What PTOs Collect (BT)

- Overall Customer Satisfaction
- Network Performance
  - » first time call connection
  - » call failure rate
  - » customer reported faults
- Requests for Service Assumptions
  - » completion by agreed date (bus. & res.)
- Repair of Service
  - » fault clearance

Examples of PTO Indicators (BT)

- Operator Services
  - » Operator response time
- Public Payphones
  - » Number of Payphones
  - » Average number in working order
- Private Leased Circuits
  - » Installations by contracted date
  - » Faults per circuit
  - » Fault per clearance

Other Indicators PTOs Publish/Detail

- Service Provision
  - » Network coverage
  - » New/In place connections
- Call Completion by Type and Time of Day
  - » Local, Long Distance, International, Mobile.
  - » By area (e.g. Urban/Rural or CBD)
  - » Busy Hours, Day/Night.

Indicators PTOs Publish/Detail

- Fault Clearance and Location
  - » By number of days, working days, hours
  - » Missed days beyond appointment.
  - » Trouble reports
    - – actual faults found.
    - – Trouble reports found OK (e.g. CPE problem)
    - – repeat trouble reports
  - » Switches with downtime/Trunk Blocking
    - – number of switches with downtime & average downtime
    - – percentage of trunk groups exceeding objective for blocking

Indicators PTOs Publish/Detail

- Customer Access
  - » Directory Assistance Calls entering the network and being answered within 10 seconds
  - » Calls entering Directory Assistance queue and not being answered
  - » Calls entering service difficulties queue and being answered within 15 seconds.
  - » Calls entering service difficulties queue and leaving without being answered

Indicators PTOs Publish/Detail

- Complaints or Inquiries?
  - » Total Complaints
  - » Satisfaction with Complaint Handling
  - » Service/Activity Specific Complaints
    - – Billing
    - – Service Restoration
    - – Other (e.g. Staff, Advertising)
  - » Reporting Measures
    - – Per Customer Bill (e.g. 1000)
    - – % of Total
    - – Written

Quality of Service Indicators Collected by OECD

- Waiting time
- Outstanding Connections
- Network Coverage
- Call Completion
- Faults/Repair time
- Payphones
- Customers with Itemised bills
- Availability of New Services and Price

Concluding Points

- Quality of Service indicators are vital irrespective of market structure
- Hamonise key Indicators in accord with ITU handbook definitions
- Importance of time series
- Appropriate regulatory powers to request information (needs will change over time)
- Regulatory publish key indicators

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Document WTIM96/27-E
19 March, 1996
Original: English

World Telecommunication Indicators Meeting
(Geneva, 19 - 21 March 1996)

SOURCE: TELEBRAS, Cleverson Pereira de Almeida

TITLE: CUSTOMER SATISFACTION MEASUREMENT

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WORLD TELECOMMUNICATION INDICATORS MEETING

GENEVA, 19 - 21 MARCH 1996

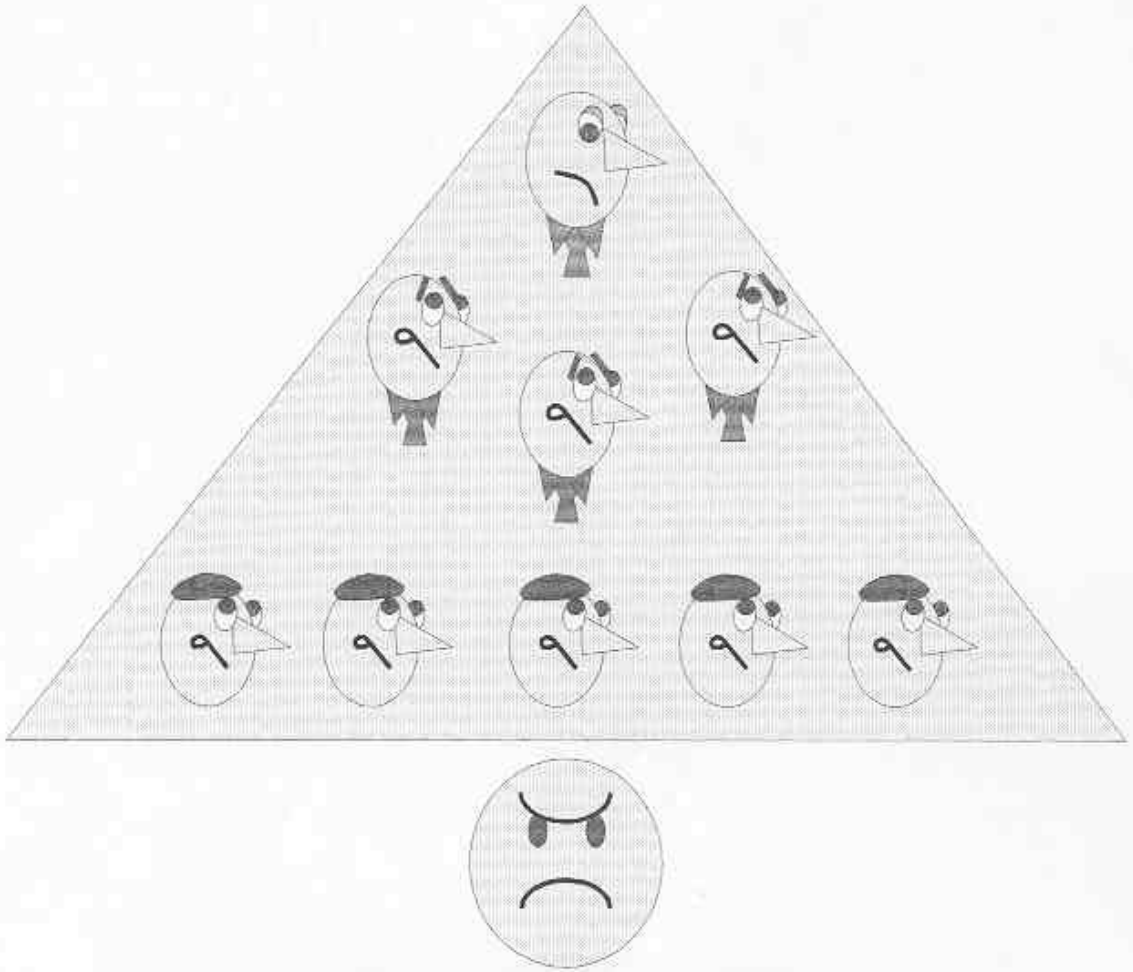
CUSTOMER SATISFACTION MEASUREMENT

CLEVERSON PEREIRA DE ALMEIDA

Statistician

Marketing Management Department

TELEBRÁS



CUSTOMER

ISO 9004, item 0.1

In order to be successful, and organization should offer products that:

a) meet a well-defined need, use or purpose
b) satisfy customer’s expectations
c) comply with applicable stands and specifications
d) comply with requirements of society
e) reflect environmental need
f) are made available at competitive prices
g) are provided economically.

ISO 9004, part 2, 6:3:3

Service organizations should institute an ongoing assessment and measurement of customer satisfaction. These assessment should seek positive as well as negative reactions and their likely effect on future business.

SATISFACTION

The psychological concept which expresses better than any other the adjustment of our actions to the expectations of the client is the one called satisfaction. We say that there is satisfaction when a working action or the functioning of a service is at the level of the desires of the client, of what he was waiting for, obtaining as effect a gratifying sensation or at least the lack of tension.

(José Rial Avendaño, Enrique Carreras and Marina de Jaén Sanchez, in "The Measurement of Quality of the Telephone Services in Spain: Customer Satisfaction")

HISTORICAL BACKGROUND (1)

1983 - First Studies
(GTE experience: TELECEL - Customer Expectation Level)

1984 - First Survey: Telephone Use and Service
- 10 major state capitals
- only residential survey
- telephone interviews

1985 and 1986 -
- all state capitals (26 cities) and two restricted interior areas
- annual surveys

from 1987 to 1990
- capitals and interior (200 customers interviewed in each operation subsidiary area)

1988 - subsidiary companies begin to process their own surveys using SELAP software.

HISTORICAL BACKGROUND (2)

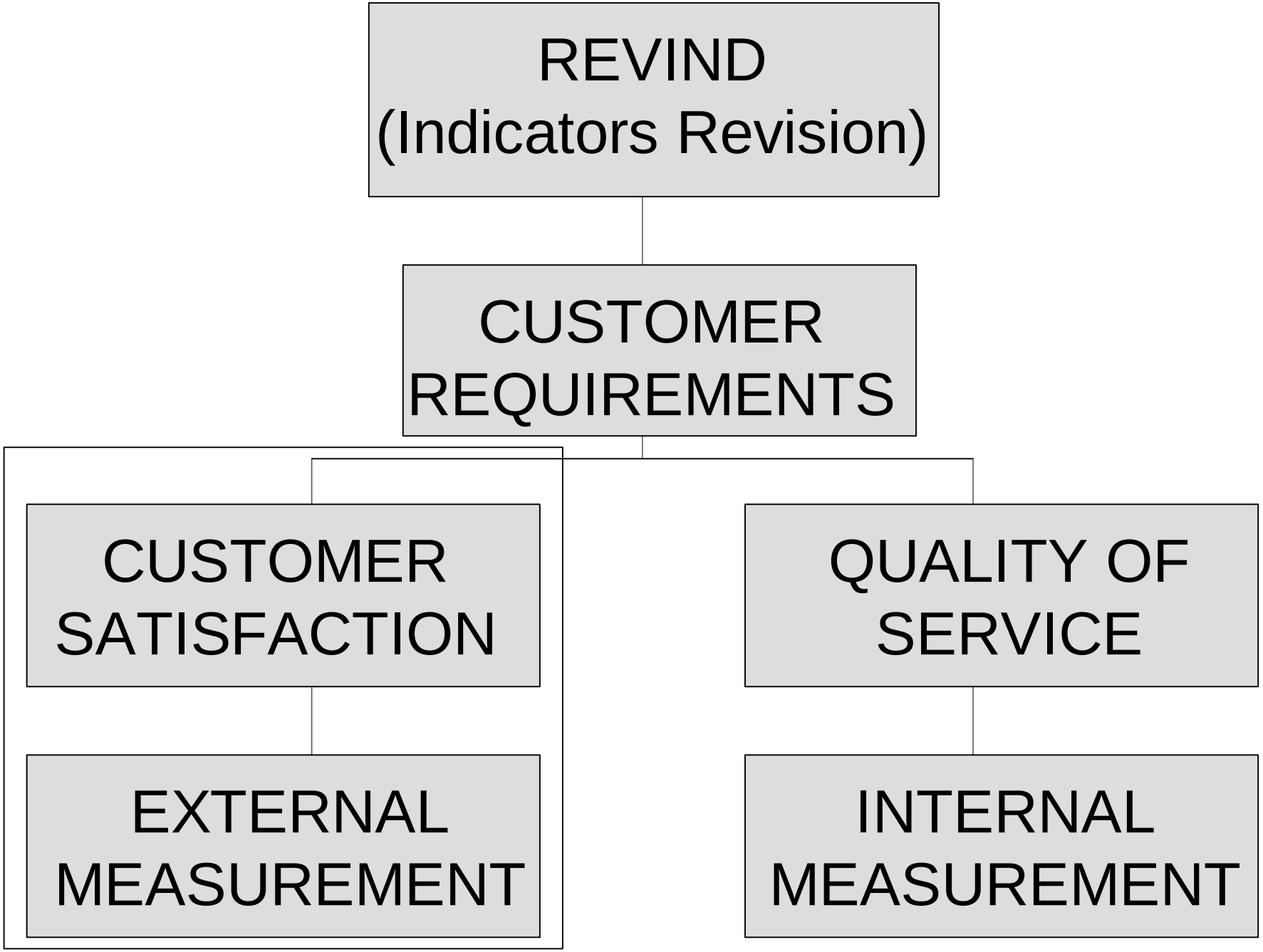
1991 - REVISION

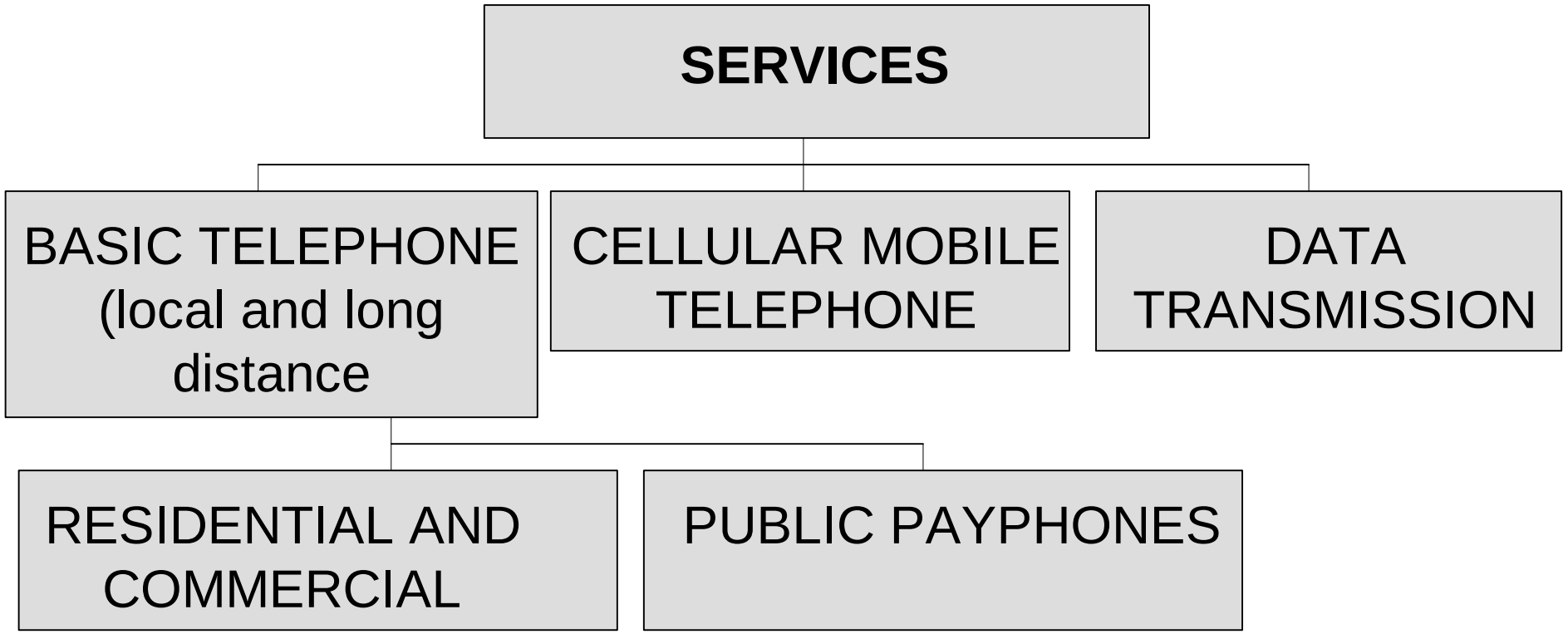
- residential and commercial segments
- daily use, technical assistance and attendance surveys
- inclusion of public payphones
- semestral surveys
- 89 operating areas
- more than 50.000 customers interviewed each semester (by phone)
- weighted survey (personal interviews)

1995 - REVIND

- previous qualitative research (customer requirements)
- inclusion of two specific surveys: data transmission and public payphones
- quarterly surveys
- only proportions as satisfaction indicators

1996 - New surveys and set of satisfaction indicators


REVIND
(Indicators Revision)
CUSTOMER
REQUIREMENTS
CUSTOMER
SATISFACTION
QUALITY OF
SERVICE
EXTERNAL
MEASUREMENT
INTERNAL
MEASUREMENT


SERVICES
BASIC TELEPHONE (local and long distance
CELLULAR MOBILE TELEPHONE
DATA TRANSMISSION
RESIDENTIAL AND COMMERCIAL
PUBLIC PAYPHONES

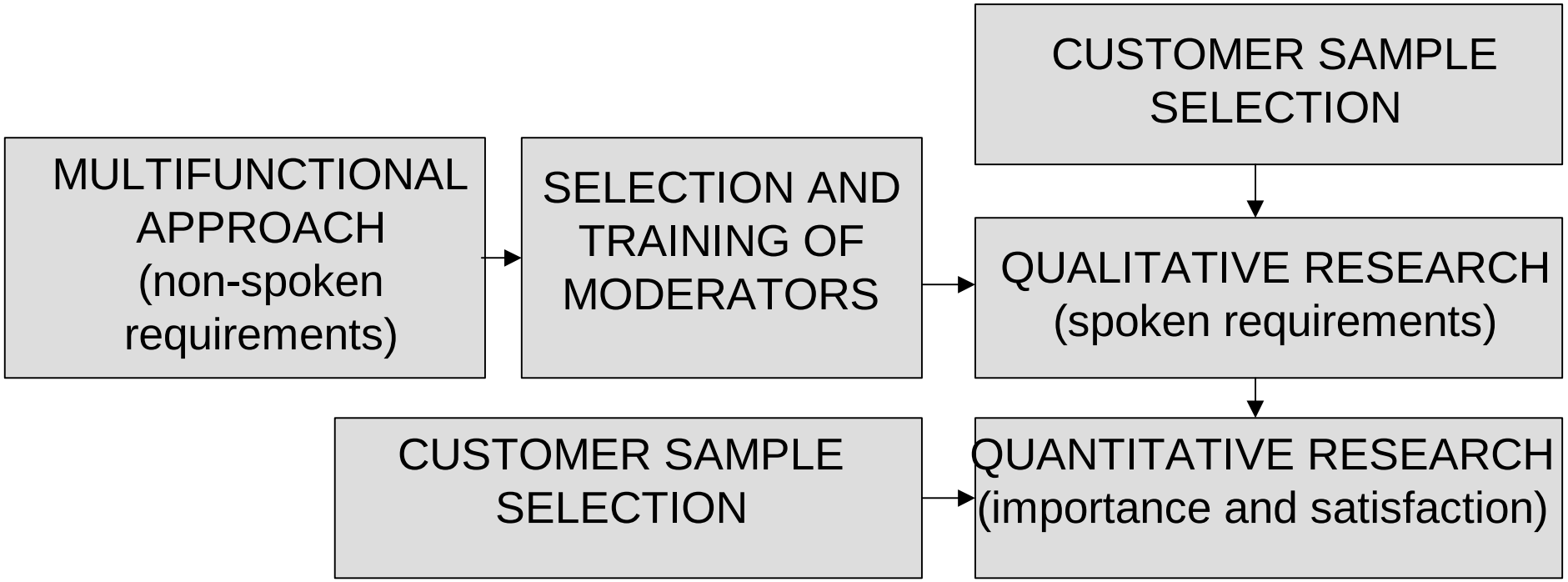
QUALITY DIMENSION

The purpose of determining customer requirements is to establish a comprehensive list of al! the important quality dimensions that describe the service or product. It is important to understand the quality dimensions so that you will know how customers define quality of your service or product. Only by understanding the quality dimensions will you be able to develop measures to assess these quality dimensions.

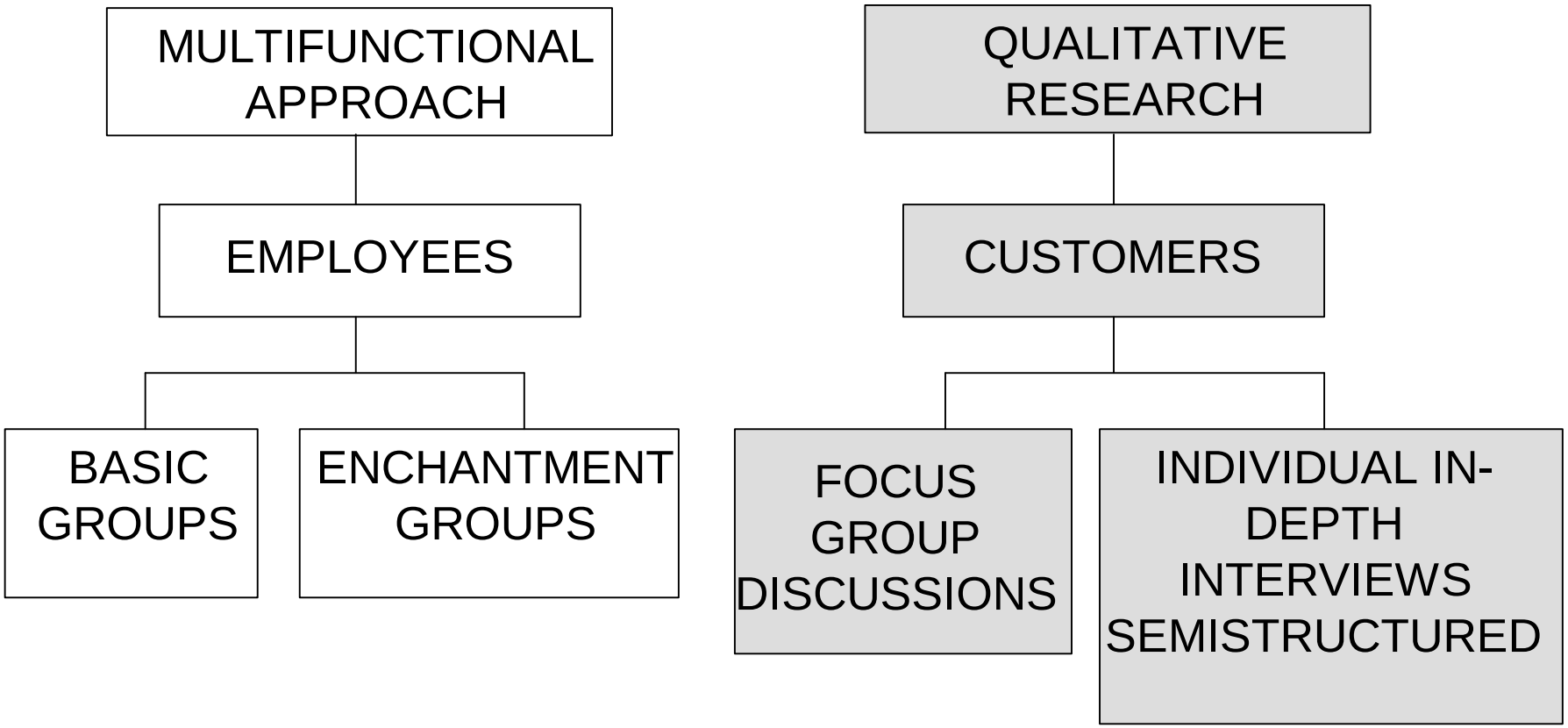
(Bob E. Hayes, in "Measuring Customer Satisfaction

- Development and Use of Questionnaires")

OBTAINING CUSTOMER REQUIREMENTS



GENERATING CRITICAL INCIDENTS



CRITICAL INCIDENT

A critical incident is a specific example of the service or product that describes either positive or negative performance. A good critical incident for defining customer requirements has two characteristics:

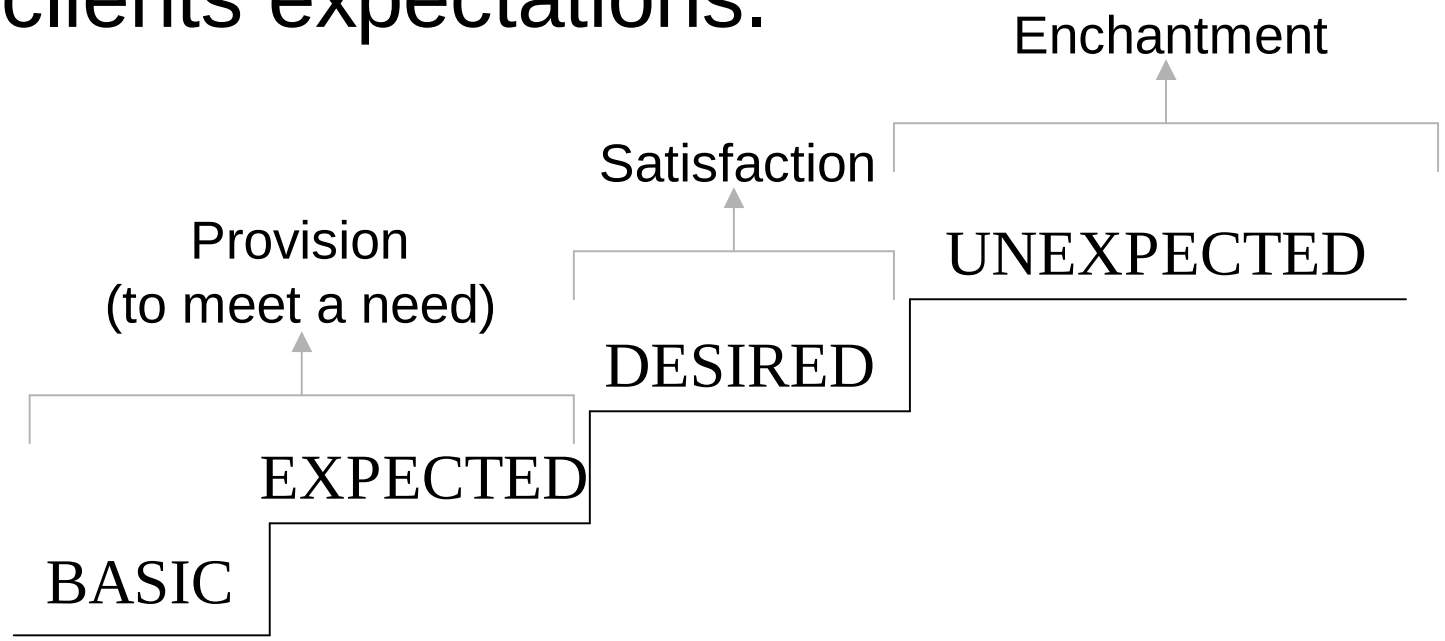
1) it is specific,

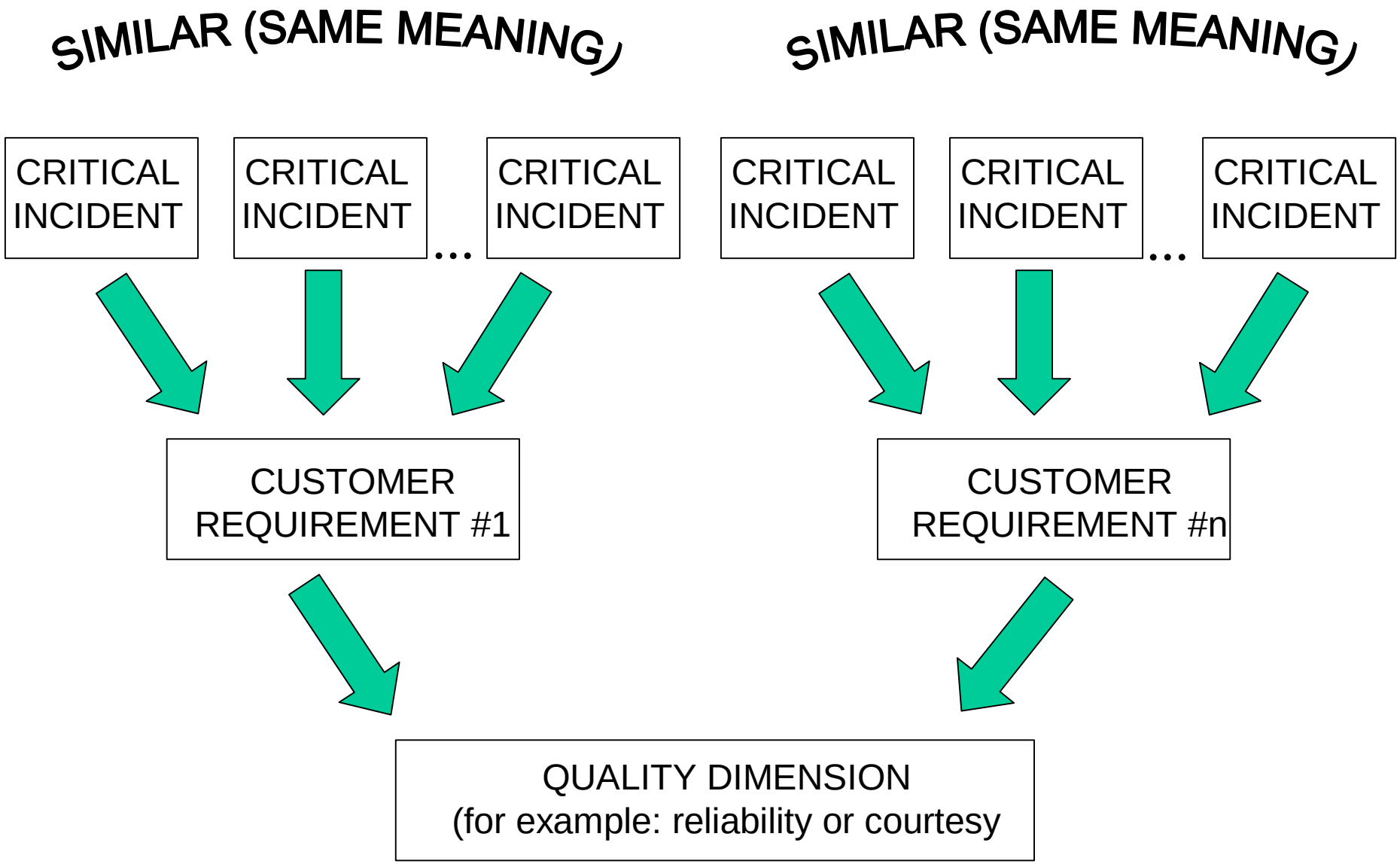
2) it describes the service provider in behavioral terms or describers the service or product with specific adjectives

(Bob E. Hayes)

ENCHANTMENT GROUPS

These groups of employees seek something different, special, creative that can improve our services and surpass our clients expectations.



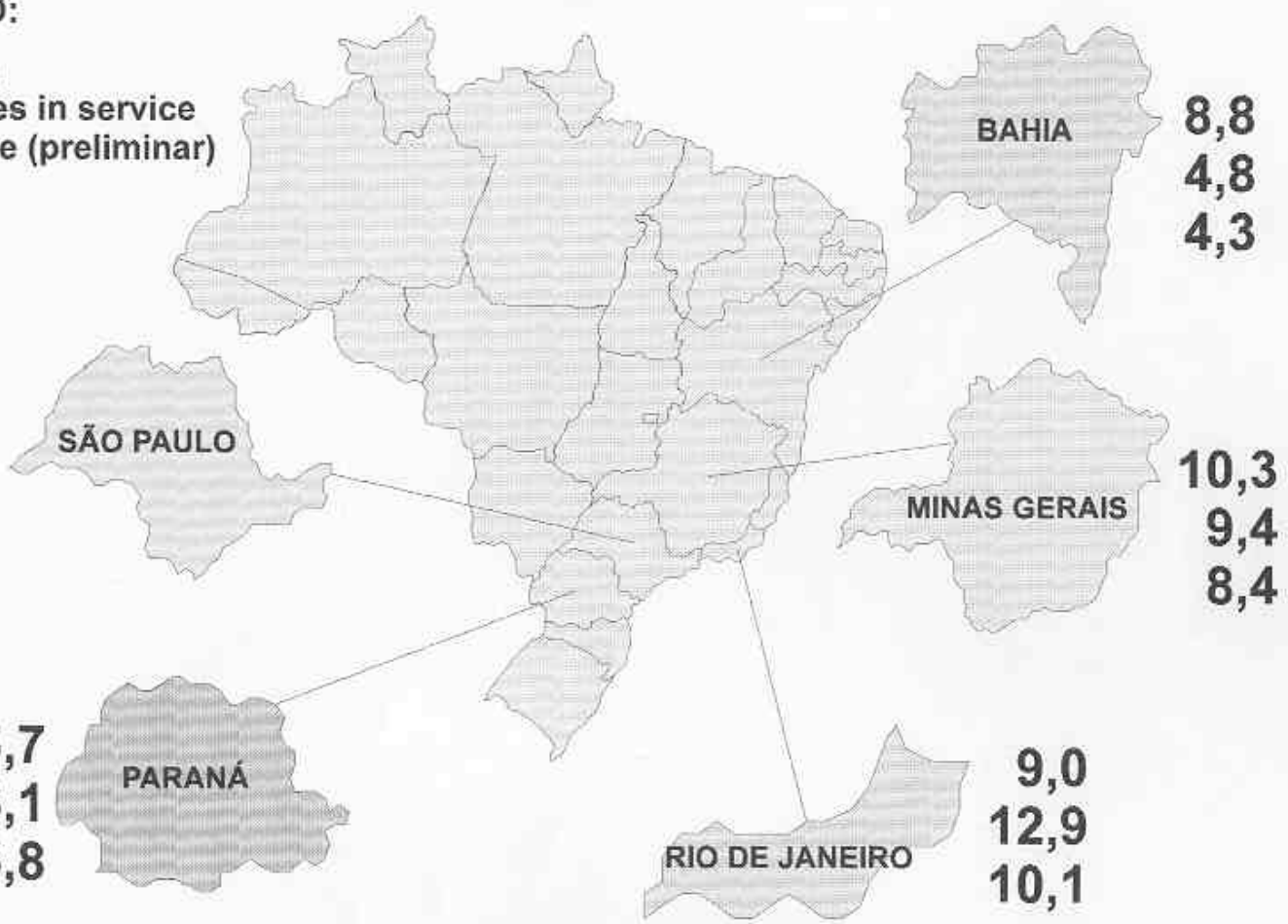

SIMILAR (SAME MEANING)
SIMILAR (SAME MEANING)
CRITICAL INCIDENT
CRITICAL INCIDENT
...
CRITICAL INCIDENT
CRITICAL INCIDENT
CRITICAL INCIDENT
...
CRITICAL INCIDENT
CUSTOMER REQUIREMENT #1
CUSTOMER REQUIREMENT #n
QUALITY DIMENSION
(for example: reliability or courtesy

TELEBRÁS

BRAZIL

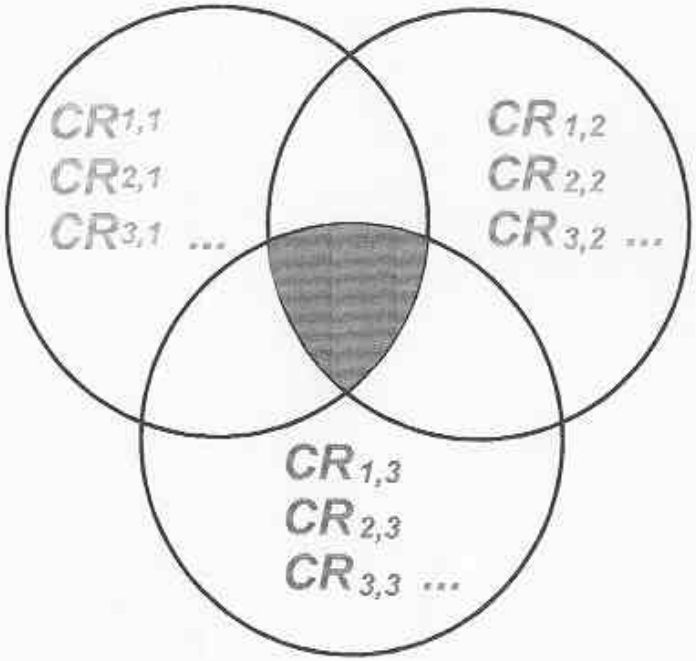
LEGEND:

% population
% access lines in service
% net revenue (preliminar)



TELEBRÁS

INDICATORS FOR TELEBRÁS (HOLDING) MANAGEMENT, SERVICE "S"



$CR_{i,j}$: customer requirement i
obtained by operating subsidiary j

SCALE (for satisfaction questions)

5 - Very satisfied

4 - (Satisfied)

3 - (Neither satisfied nor dissatisfied)

2 - (Dissatisfied)

1 - Very dissatisfied

When we ask these questions, we ask a score from 1 to 5 explaining the meaning of these two limit scores.

SOFTWARE:

SELAP

Opinion Surveys Monitoring System

Supervisor: José Ronaldo Avelar

E-mail: ronaldo@sede.telebras.gov.br

GLOBAL INDICATOR

STC01: Proportion of customers satisfied with Telecom services.

Notes:

(a) for this indicator the same question is used for all different surveys;

(b) this proportion includes only scores 5 and 4 of the scale

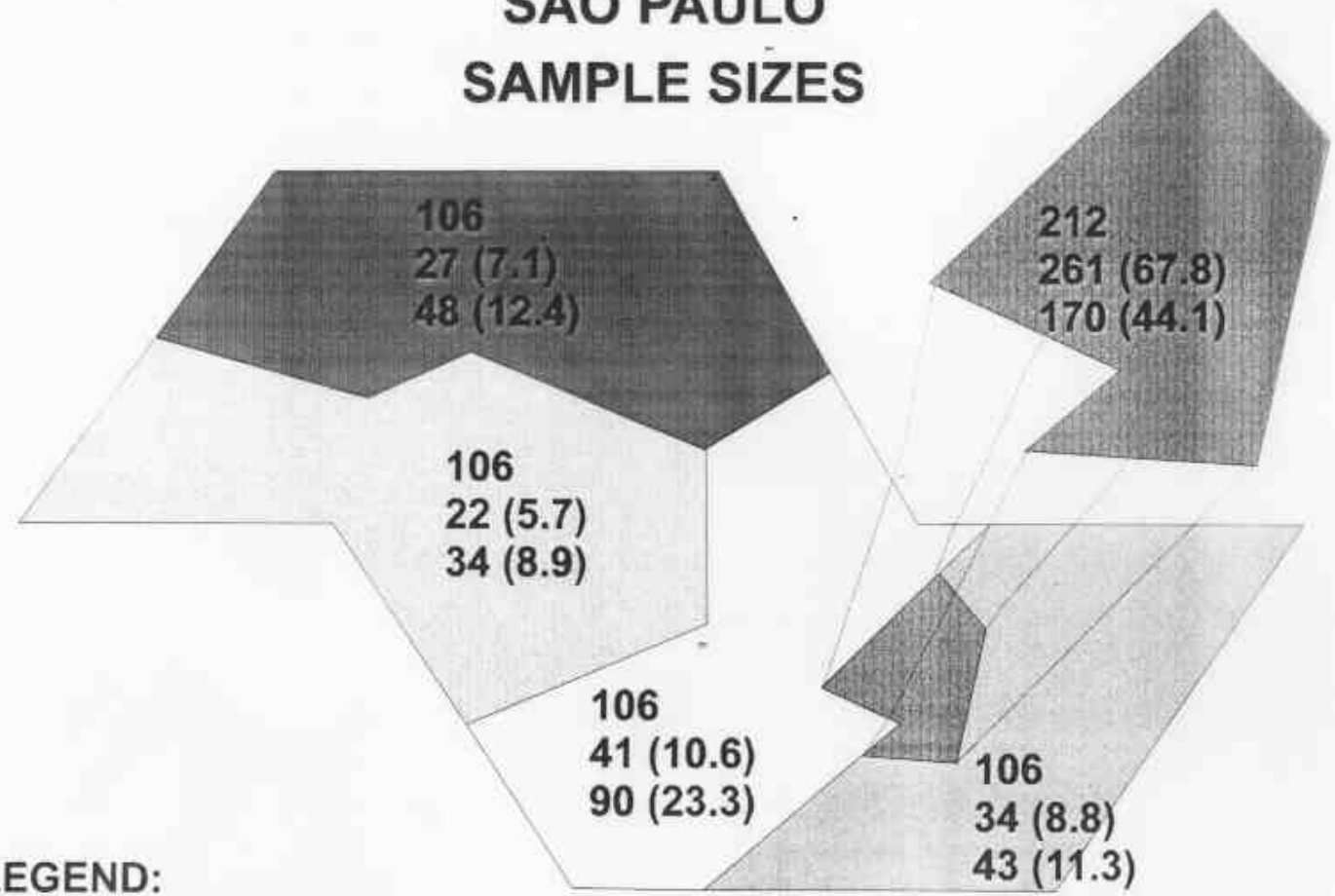
SYNTHESIS

SAMPLING PROCEDURE: STRATIFIED SAMPLING

SURVEY	METHODS OF DATA COLLECTION	RELIABILITY AND SAMPLING ERROR (PRECISION)	SAMPLE SIZE	SATISFACTION INDICATORS	PERIODS
PHONE ATTENDANCE **PERSONAL ATTENDANCE** **TECHNICAL ASSISTANCE** **DAILY USE + PHONE ATTENDANCE**	**TELEPHONE (or personal, for personal attendance)**	**85%** **7%**	**106 (OPERATING AREA)**	**2** **2** **3** **8**	**FEB, MAY AUG, NOV** **MAY, NOV**
CELLULAR MOBILE	TELEPHONE	95% 5%	385 (SUBSIDIARY)	11	APR, OCT
DATA TRANSMISSION	PERSONAL	?	?	?	APR. OCT

TELEBRÁS

SÃO PAULO
SAMPLE SIZES



LEGEND:
- BASIC TELEPHONE
- CELLULAR MOBILE (% CELLULAR LINES)
- PUBLIC PAYPHONES (% POPULATION)

INDICATORS FOR RESIDENTIAL AND COMMERCIAL TELEPHONE SERVICES (1)

(A) Proportion of customers satisfied with…

1) the time between the request for service and the service;

2) the waiting time to be attended;

3) the quality of services provided on the field;

4) personal attention given by technician;

5) personal attention during phone attendance;

6) personal attention during personal attendance (in company offices);

7) different facilities/options offered to pay the bill;

8) the level/degree of information about services offered by the company;

INDICATORS FOR RESIDENTIAL AND COMMERCIAL TELEPHONE SERVICES (1)

(B) Proportion of customers dissatisfied with…

9) non-completion of calls;

10) the number of calls cut-off;

(C) Proportion of customers who allege…

11) billing errors;

12) that the bill arrived late;

13) difficulties in understanding the bill;

(D) Proportion of...

14) demand satisfaction

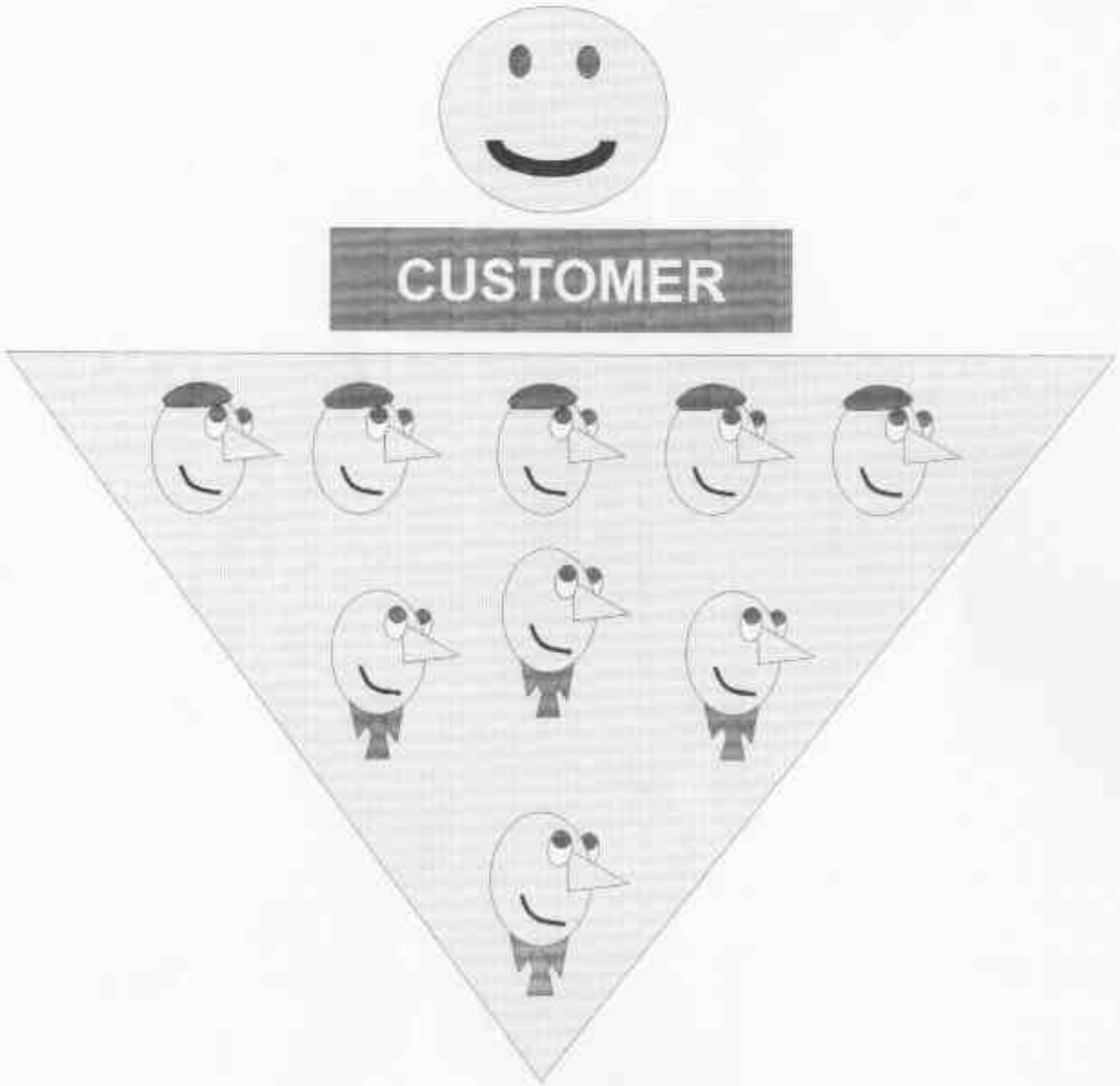
AUDITING

Objective: Certification of Indicators Reliability

Main steps:

- Checking of obtaining processes
- Checking of measurement systems
- Corrective actions

TELEBRÁS



Session 5: Collecting Statistics

Tips and experiences in defining and collecting telecommunication statistics. The problems of arriving at harmonised definitions and aggregating data. Addressing confidentiality concerns.

"Telecommunication Market Report"
M. Duckworth, OFTEL (UK)

"Quaterly Market Report"
R. Martinez, SCT, Mexico

"Regional statistics"
V. Sivoraksha, Regional Commonwealth for Communications, Russia

"African telecommunication observatory"
G. Zongo, ATO, Senegal

Wednesday
20 March

INTERNATIONAL TELECOMMUNICATION UNION

TELECOMMUNICATION DEVELOPMENT BUREAU

INFORMATION SYSTEMS UNIT

Document WTIM96/10-E
18 March, 1996
Original: English

World Telecommunication Indicators Meeting
(Geneva, 19 - 21 March 1996)

SOURCE: OFTEL (UK), Martin Duckworth

TITLE: TELECOMMUNICATION MARKET REPORT

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UK TELECOMS LIBERALIZATION - KEY DATES

1981 British Telecom (BT) created

1984 BT privatized. OFTEL set up.

1985 Two cellular operators started.

1986 Mercury (MCL) begins competing with BT.

1991 Duopoly review proposes increased competition.

1992 Cable TV operators offer telephony.

1993 Third cellular operator

1994 Number of fixed link operators start up

Fourth cellular operator

USES OF THE MARKET DATA - OFTEL AND OUTSIDE

Monitoring network competition

Monitoring service competition

Assessing whether operators are dominant for anti competition investigations

Implementing parts of licences which require market share information

Improving the efficiency of the market through more accurate information

DATA COLLECTED - FIXED OPERATORS

Retail Call Revenues
Retail call volumes (minutes)
Interconnect revenues
Interconnect volumes
Enhanced PSTN services (centrex/VPN, Freephone etc., Charge cards)
Exchange line numbers
Exchange Line revenues
Payphones
Leased Lines
Telex

DATA COLLECTED - CELLULAR NETWORK OPERATORS

Number of subscribers
Rental revenues
Connections & disconnections
Connection revenue
Call revenues
Call Volumes
Interconnect revenues
Interconnect volumes

DATA COLLECTION METHODS

Paper forms used for collection

Input onto FoxPro database within OFTEL

Rely heavily on operators co-operation

Operators can be ordered to supply information

Quarterly (every 3 months) cycle:

2 months after end of period	Forms sent to operators
4 months after end of period	Completed forms returned
6 months after end of period	publication released

PUBLICATION - CONFIDENTIALITY ISSUES

Director General has wide powers to publish data

Operators do not want data published

Operator level data only published on larger/established operators

Only a subset of data is published for any operator

Unpublished data not released outside OFTEL.

PUBLICATIONS - ANNUAL VS QUARTERLY

Annual Publication

Aimed at broad range of users
Covers the total market
"Glossy" publication
Comprehensive notes

Quarterly publication

Aimed at telecoms analysts
Coverage limited to the areas of the market of most interest
Produced quickly and cheaply
Concentrates growth in competition and growth in total market

REVIEW OF DATA COLLECTION

Need to balance needs of users with resources within OFTEL and the operators

Three inputs to decisions

- Consultation with operators
- Consultation with users within OFTEL
- Own experience of collecting data

Results

- In less important areas could reduce the frequency from quarterly to annual
- Notes and definitions need improving
- In some areas may need more detail
- Problems with leased lines & interconnect data

DATA FOR GEOGRAPHIC AREAS

"UK market" increasingly becoming a number of geographic markets

OFTEL has a duty to ensure the benefits of competitions are spread fairly

Proposing to collect information on access market (exchange lines)

Divide the country using postcodes
Collect the number of exchange lines each area

COLLECTION OF DATA ON ENHANCED SERVICES

Any service other than basic transmission (data or voice)

- VPN/Centrex
- Content provision - on-line databases, information lines
- enhanced PSTN services
- etc.

Attempted data collection building on existing methods with mixed results

Increasing interest from regulatory perspective

Starting a second round of data collection

PROBLEMS COLLECTING DATA ON ENHANCED SERVICES

Large range of services offered

New services emerging

Blurring of boundaries between IT and telecoms (convergence)

Large number of service providers

No register of service providers

SETTING UP DATA COLLECTION - LESSONS

Get clear user requirements

Understand the market and the operators

Consult with operators at an early stage

Find out what data the operators have

Make sure the requirements are clear and unambiguous

Be prepared to be flexible with newer operators

Co-operate where possible/ use legal powers when necessary

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Document WTIM96/17-E
18 March, 1996
Original: English

World Telecommunication Indicators Meeting
(Geneva, 19 - 21 March 1996)

SOURCE: SCT (Mex), Roberto Martínez Illescas

TITLE: QUARTERLY TELECOMMUNICATION REPORT: A STRATEGIC APPROACH TO FOSTER COMPETITION THROUGH TRANSPARENCY

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Secretaría de Comunicaciones y Transportes

QUARTERLY TELECOMMUNICATIONS REPORT:

A Strategic Approach to Foster Competition Through Transparency

Mach 1995.

Subsecretaría de Comunicaciones y Desarrollo Tecnológico

- **MEXICO HAS THE 17th LARGEST TELEPHONE NETWORK (IN TERMS OF SUBSCRIBERS) AND IS TENTH IN TERMS OF TURNOVER**

- **TELECOMMUNICATIONS IN MEXICO HAS BEEN GROWING MUCH FASTER THAN THE ECONOMY AS A WHOLE.**

- **IN 1994 TELECOMMUNICATIONS REACHED 2.5% OF MEXICAN GNP.**

TELMEX HAS BEEN THE MAIN ECONOMIC AGENT IN THE INDUSTRY AND HAS BEEN RESPONSIBLE FOR AN EXTENSIVE PROGRAMME OF GROWTH AND TECHNOLOGICAL MODERNIZATION OF THE PUBLIC TELECOMMUNICATIONS NETWORK.

- **SINCE 1990, THE NUMBER OF LINES IN SERVICE HAS GROWN MORE THAN 12% ANNUALLY.**
- **SINCE PRIVATIZATION TELMEX HAS INVESTED AROUND 10 BILLION DOLLARS.**
- **IN THE LAST FIVE YEARS TELMEX HAS INSTALLED NEARLY HALF OF THE EXISTING TELEPHONE LINES.**
- **THE DIGITALIZATION HAS REACHED 83% OF THE NETWORK**
- **THE LONG DISTANCE NETWORK HAS OVER 30,000 KILOMETERS OF FIBER OPTICS CABLE.**

- **CELLULAR TELEPHONY IS AVAILABLE IN 160 CITIES IN THE COUNTRY.**
- **THERE ARE MORE THAN 660,000 SUBSCRIBERS.**
- **SINCE 1990, TERMINAL EQUIPMENT AND VALUE ADDED SERVICES MARKETS HAVE BEEN DEREGULATED.**

HOWEVER, AS NEW OPERATORS AND SERVICES ARE ABOUT TO ENTER THE MEXICAN TELECOM SECTOR, EFFECTIVE COMPETITION WILL BECOME INCREASINGLY DEPENDENT UPON TRASNPARENCY IN THE FLOW OF BOTH REGULATORY AND STRATEGIC MARKET INFORMATION .

NEW COMPETITION AND TECHNOLOGICAL CHANGE ARE TO MODIFY DRAMATICALLY THE ORIENTATION, CONTENT AND FORMAT OF KEY STATISTICAL, REGULATORY AND ECONOMIC INFORMATION ON THE PERFORMANCE OF EVER MORE DIVERSE TELECOMMUNICATIONS MARKETS.

TELECOMMUNICATIONS POLICY SHOULD RECOGNISE THAT THERE ARE IMPORTANT ASYMMETRIES AMONGST ECONOMIC PLAYERS IN TERMS OF ACCES TO KEY INFORMATION ON:

- THE STATE OF INFRASTRUCTURE
- THE PENETRATION AND QUALITY OF SERVICES
- PATTERNS OF INVESTMENT IN TELECOMM MARKETS
- THE EVOLUTION OF TARIFFS.

IN VIEW OF THIS, GOVERNMENT HAS TO PLAY A DETERMINANT ROLE AS PRO-COMPETITION AGENT BY SERVING AS AN INFORMATION CLEARINGHOUSE TO ALL THOSE WHO MAY BENEFIT FROM THE REGULAR AND TIMELY EVALUATION OF PERFORMANCE IN PRESENT AND FUTURE TELECOMMUNICATIONS MARKETS

TO INCORPORATE THESE POLICY GOALS, THE MEXICAN GOVERNMENT, IN THE SPIRIT OF A NEW REGULATORY FRAMEWORK, HAS DECIDED TO ESTABLISH A CENTRE FOR STATISTICS AND INFORMATION ON THE TELECOMMUNICATIONS SECTOR.

IN PURSUIT OF THIS OBJECTIVE, SCT DEEMS AS AN ADEQUATE STRATEGY THE ADOPTION OF AN INCREMENTAL APPROACH, WHEREBY THE CENTRE WOULD EMERGE FROM A THREE-STAGE PROCESS:

- **THE ELABORATION OF A QUARTERLY TELECOMMUNICATIONS REPORT**
- **THE IMPLEMENTATION OF A TELECOMMUNICATIONS MARKET INFORMATION SYSTEM**
- **THE DEFINITION OF INSTITUTIONAL CHANNELS WHICH SUPPORT THE EXPANSION OF THIS SYSTEM IN ORDER TO CREATE THE CENTRE.**

ACORDINGLY, THE QUARTERLY TELECOMMUNICATIONS REPORT WILL ...

- SERVE AS THE INITIAL POINT OF REFERENCE IN THE IDENTIFICATION AND/OR DEFINITION OF THOSE DATA AND INDICATORS WHICH PROVE TO BE MOST RELEVANT TO THE NEEDS OF PRIVATE INVESTORS.
- ALLOW FOR THE NECESSARY LEARNING, THROUGH CONSTANT INTERACTION WITH THE INDUSTRY, IN THE SEETING UP OF A STATE-OF-THE-ART INFORMATION SYSTEM.
- FUNCTION AS A TEST BED FOR NEW SCHEMES OF INTER-GOVERNMENT COOPERATION IN THE USE OF INFORMATION PRODUCTS AS A TOOL FOR INDUSTRIAL POLICY, AND THE DEFINITION OF A NEW SET OF PUBLIC INFORMATION RULES .

THE TELECOMMUNICATIONS QUARTERLY REPORT WILL INITIALLY COVER FIVE MAIN AREAS...

1. REGULATORY MILESTONES AND UPDATE

- **KEY PAST DECISIONS IN THE TRANSFORMATION OF THE TELECOMMUNICATIONS REGULATORY FRAMEWORK**
- **STATUS OF PRESENT PRO-COMPETITION RULEMAKING SPECIFIC TO THE TELECOMMUNICATIONS SECTOR, AS WELL AS THAT IN OTHER AREAS OF THE ECONOMY WHICH CAN ALSO BE RELEVANT**

2. LICENCES

- **By company, ownership, type of service and area of geographic coverage.**
- **Licence watch, or the update on the status of current licencing procedures.**

3. MARKET INFORMATION

- **Evolution in the participation of different services in the size of Mexico's telecommunications markets (actual and prospective)**
- **State and evolution of telecommunication markets infrastucture as related to competition and the introduction of new technologies.**
- **Actual and projected sociodemographic composition of the user base for each of these markets and services.**

4. INTERNATIONAL COMPARISON

- **Benchmarking through the use of commonly accepted definitions as used by international telecommunications organisms (ITU, OECD)**

- **Identification of prevailing trend in the evolution of telecommunication markets worldwide which may suggest new information needs from the Mexican telecommunications industry.**

5. DISAGGREGATED DATA BY GEOGRAPHICAL REGION AND STATE.

- **Breakdown of the above indicators by density of users, actual and potential opportunities for expansion of coverage**

KEY PROVISIONS IN ADDRESSING PROBLEMS OF COLLECTING AND HARMONISING DATA, AS WELL AS CONFIDENTIALITY CONCERNS...

STARTING POINTS

DETERMINATION OF BASIC RULES TO COMPILE A SET OF UNIFORM DEFINITONS ON AN INTRA-GOVERMENT REGULATION.

DEFINITION OF COMMON FORMATS AND PROCEDURES FOR THE DESIGN OF SURVEYS AND OTHER REQUIREMENTS TO THE INDUSTRY

CLOSE COOPERATION WITH THE NATIONAL STATISTICAL OFFICE IN THE DEFINITION OF THE LOGISTICS FOR THE SETTING UP OF INFORMATION SYSTEMS

CONSTANT CONSULTATION WITH THE INDUSTRY AS TO THE INFORMATION NEEDS FOR EACH RELEVANT MARKET

CONSENSUS BUILDING AS TO BASIC GUIDELINES FOR CONFIDENTIALITY RIGHTS ON AN INTRA GOVERNMENT LEVEL AS WELL AS AN INDUSTRIAL LEVEL.

CALENDAR

LOCAL CABLE BASED PUBLIC TELECOM NETWORKS

CONCESSION GRANTING **STARTING OCTOBER 1995**

SPECTRUM BASED PUBLIC TELECOM NETWORKS

AUCTIONS **STARTING 1996**

OTHER TARGET DATES

PRIVATIZATION OF MEXICAN SATELLITE SYSTEM.	**MID 1996**
CREATION OF NEW REGULATORY AGENCY.	**AUGUST 1996**

THE NEW REGULATORY FRAMEWORK WILL MAKE THE TELECOMMUNICATIONS SECTOR A LEVER FOR MEXICO´S DEVELOPMENT

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Document WTIM96/21-E
18 March, 1996
Original: Russian

World Telecommunication Indicators Meeting
(Geneva, 19 - 21 March 1996)

SOURCE: RCC, V. Sivoraksha

TITLE: REGIONAL STATISTICS

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REGIONAL STATISTICS
(experience, prospects)

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Establishment of regional statistics within the Regional Commonwealth the field of Communications (RCC)

Allow me first of all to say a few words about the RCC. The Commonwealth was established on 17 December 1991 by the P&T administrations of 12 newly independent States formed on the territory of the former Soviet Union. The purpose of this new regional entity, as embodied in its Charter, is wide cooperation and concerted efforts in the field of telecommunication and postal services.

Membership of the Commonwealth is open to the P&T administrations and operators of other States, and at 1 January 1996 the number of participants had risen to 20, including 13 full members and seven observers.

The RCC, in its capacity as a regional telecommunication organization, is officially registered as an observer with ITU and UPU.

The RCC's status is also defined within the CIS. The Council of Heads of Government of the CIS recognized the RCC as an intergovernmental coordinating body.

The work of the RCC is currently conducted in six committees, comprising experts from all the P&T administrations.

One aspect of the RCC's work is the production of annual statistical reports on the development of communications in CIS countries. An analysis of the data contained in these reports provides a general picture of telecommunications and telecommunication development trends in the CIS as a whole and in each individual country.

The report contains data characterizing the activities of each P&T administration in the year covered, in the following sections:

1) technical facilities in all sub-sectors of posts and telecommunications at the end of the year;
2) volume of communication services provided to customers during the year, demand for communication services per capita and per household, and level of customer service;
3) performance indicators;
4) national tariffs for basic P&T services for the general public and for commercial entities, expressed in national currency and in US dollars;
5) basic economic indicators (income, expenditure, profit, wage bill, capital investment), expressed in national currency and in US dollars;
6) activities of the P&T administrations in the field of legislation, regulation and management.

The volume of tabular information in our annual statistical report (for 1994) is slightly larger than in the ITU's report: 173 basic (primary) indicators as against 53 in the ITU report, and 55 comparative (secondary) indicators. These figures relate solely to the tabular information.

Unlike the ITU report, which, as is well known, offers a huge amount of analytical material on all aspects of the development of telecommunication services, our report does not contain any analytical surveys.

As I have mentioned, to facilitate comparison, tariffs for communication services and basic economic indicators expressed in monetary terms are given not only in each country's national currency but also in US dollars.

Amounts in national currency are converted into US dollars by the RCC Executive Committee on the basis of the mean exchange rate over the year.

This is done by taking the official exchange rate with the US dollar prevailing in national banks of nearby foreign countries at the end of each month quoted in the "Financial Times" newspaper and calculating the arithmetic mean of the 12 figures for the year, thus giving the national currency equivalent of 1 US dollar.

I shall not bore you with the many different figures contained in the report, but will merely give two examples:

1) The basic indicator used to characterize the level of telecommunication development and the level of customer service in developing countries is the number of basic telephones (main lines). In 1994, the number of basic telephones rose in almost all CIS countries (with two exceptions). Straight growth in the CIS as a whole represented 1 million units or 2.5%, with a maximum of 6% attained in Turkmenistan. The number of residential telephones rose during the year in all CIS countries, representing a straight increase of 1.3 million units or 4.3%.

2) The number of outgoing trunk telephone calls rose by 1.4% in comparison with 1993 in the CIS as a whole, growth being recorded in eight of the 12 countries.

It may thus be concluded from the above data that there is a trend towards some expansion of the telecommunication services provided. Moreover, this was achieved against the background of a significant drop in industrial output and GDP in all the CIS countries. The fall in GDP in the different countries ranged from 2 to 30% in 1994 and 1 to 17% in 1995.

Prospects

In what way do we intend to improve regional statistics in the future?

1 Data collection and dissemination methods

At present, statistical information is collected through national statistical bodies and through government offices, i.e. the P&T administrations. We believe the information collected by the administrations, which have the benefit of more highly qualified specialists, to be more reliable than that available in statistical bodies.

For this reason, we shall be cooperating with the administrations and receiving information from them. Of course, general economic information on each country comes from the statistical bodies. In particular, the territory of the former USSR is covered by the CIS regional statistical unit from which we obtain relevant information by purchasing their annual reports. Nevertheless, we cannot be sure that the statistical information received from the P&T administrations fully covers all P&T enterprises and companies in the country concerned (public, government, joint ventures, private).

There is a way of ensuring maximum coverage, in the reports, of organizations and companies of all types. In many countries, when the P&T administration issues licences to companies for the provision of a given communication service, reporting of the requisite information is mandatory (specified in the licence). We feel it is necessary to seek access to statistical data and information. At the moment, some companies,

including large ones, are endeavouring to restrict the provision of particular information (e.g. international traffic), invoking the right to maintain commercial secrecy. We make our annual statistical report available to the P&T administrations, research institutes and all interested organizations and firms (for a moderate fee).

2 Comparability of statistical information

The break-up of the USSR four or five years ago marked the end of the unified instructions laying down and guaranteeing a unified approach to basic accounting and reporting of P&T indicators in all CIS countries. Therefore, the question of maintaining methodical comparability of telecommunication indicators in the CIS countries is now an important issue. We have decided to set up a common statistical database for the RCC and ensure that the indicators in this base are methodically comparable. A draft set of indicators for the RCC's database has been developed and distributed for perusal and discussion to all RCC administrations.

The principles on which the RCC database is established are as follows:

1) The database will include the basic reporting indicators in the CIS countries.
2) Efforts will be made to align them on the indicators used in the ITU annual report.

Once the "List of indicators in the common database" has been agreed upon and adopted in the RCC's committee on the economic aspects of communications, instructions will be elaborated in the form of "Methodical explanations for statistical indicators in the RCC database". When finalized, this document will be submitted for adoption by the Council of Heads of RCC Administrations.

Obviously, the common database being set up by RCC will not be immutable. Provision must be made in the decision of the Council of Heads of RCC Administrations to empower the RCC's committee on economic aspects of communications to improve the database. This is necessary on account of the constant emergence of new types of communication services and the need to include them in the database. Moreover, technology and the accounting principles for a number of indicators are constantly changing, telecommunication and computer networks are converging, etc. All this calls for refinement of the concepts and characteristics of indicators and, in turn, refinement of the methodical instructions governing indicators in the database.

There will be a need to codify the system of indicators established in the RCC common statistical database and store the data on diskettes and in a computer network. This task will be addressed in the near future.

I am confident that this telecommunication indicators meeting will be useful for all participants, that it will help the ITU secretariat and that it will further enhance systems of telecommunication indicators, and I wish to thank the ITU/BDT for its invitation to the meeting.

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Document WTIM96/18-E
18 March, 1996
Original: français

World Telecommunication Indicators Meeting
(Geneva, 19 - 21 March 1996)

SOURCE: ATO (Sénégal), Gaston Zongo

TITLE: INVESTIGATION OF THE REASONS FOR LOW TELEDENSITY AND PRODUCTIVITY IN THE AFRICAN TELECOMMUNICATION SECTOR

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AFRICAN TELECOMMUNICATION OBSERVATORY

WORLD TELECOMMUNICATION INDICATORS MEETING

(ITU/BDT, Geneva, 19-21 March 1996)

COMMUNICATION:

INVESTIGATION OF THE REASONS FOR LOW TELEDENSITY AND PRODUCTIVITY IN THE AFRICAN TELECOMMUNICATION SECTOR

GASTON ZONGO

I Introduction

One of the main problems encountered by African telecommunication operators, apart from funding and management, is effective planning. Even though external expert assistance has been brought in for the preparation of master plans, usually through international cooperation, in particular ITU, the lack of precise, calibrated and consistent data has always been a severe handicap to strategic decision-making.

Reliable statistics must be kept regularly and rigorously in order to establish relevant development indicators, as the raw material and basic data not only for medium- and long-term planning, but also for analyses with a view to measures to restructure and improve telecommunication sector management.

In this respect, recognition is due to ITU for the unstinting support it provides to its Member countries, especially the least developed countries, in monitoring statistics and development indicators and especially, at a more general level, establishing information management systems (IMS).

The purpose of this paper, which begins with an introduction to the African Telecommunication Observatory, is to share a few thoughts on an economic approach to African telecommunication development indicators, taking two specific indicators, teledensity and productivity, and attempting to identify the probable reasons for which they are both so low in the case of African operators.

II African Telecommunication Observatory

II.1 General background

The telecommunication sector in Africa, and especially sub-Saharan Africa, has since the 1980s undergone radical change at three levels - institutional, structural and technological.

Swept along by such changes at global level, and in order to survive, the African telecommunication sector has been obliged to join in the headlong race without always being able to keep proper balance - a race in which the advantages of youth do not always compensate for lack of experience based on analysis of a solid past.

A brief comparative overview of the management of telecommunication networks at global level -from the optical-relay telegraph of Claude Chappe, France (1794), the electrical telegraph of William Cooke and Charles Wheatstone in the United Kingdom (1837) and Samuel Morse and Alfred Vail in the United States (1838), the invention ofthe telephone by Alexander Graham Bell (1876), right up to the divestiture of the American giant AT&T (Consent Decree, 1982) - shows that networks were operated first by the private sector, then by the public sector, and are now converging once again towards the private sector, with the specific exception nevertheless of the *de facto* AT&T monopoly in the United States.

The African countries for their part did not begin managing their own networks until the 1960s, when they became politically independent, and they naturally imported the models used by whichever country tad colonized them.

Having barely separated from the postal service, African telecommunication operators are functioning in an environment in which strategic decisions have to be taken on the optimum structure and institutional framework, having due regard not only for technological advance within the sector but also, and above all, for the new rules of a market characterized mainly by the opening of frontiers and crumbling of monopolies.

Within this context, a dynamic analysis of sectoral evolution is required if we are to provide ourselves with the necessary information to control the changes to come.

While other continents have national, regional and even private structures to provide this kind of analysis of trends in the telecommunication sectors, this is not the case in sub-Saharan Africa, where government statistics services process data virtually exclusively related to other sectors of the economy, integrating telecommunication aspects only for macro-economic aggregates.

Given the importance of the role played by telecommunications in economic and social development, a facility to monitor and assess sectoral performance is indispensable, especially within the new environment that is emerging and indeed already taking definite shape**.**

The African Telecommunication Observatory is intended to help to satisfy that requirement.

II.2 Objectives

The African Telecommunication Observatory has inter alla the following three basic objectives:

1 Database in Africa

The African Telecommunication Observatory is intended to be a permanent source of updated and validated information accessible in real time, to provide formal, technical, economic and financial data and the raw material for studies based on this wealth of information.

2 Economic studies and analysis

Using the data gathered and reprocessed to ensure consistency, the African Telecommunication Observatory intends to focus efforts to understand the sector far more on the sector's role in economic activity and on the factors which determine the productivity of telecommunication services. It also aims, by means of quantitative and qualitative assessment, to highlight the strategic importance of the telecommunication sector and its impact on the growth and competitiveness of others sectors.

These studies and analyses should provide each State or operator with a basis for comparison, in order to identify more clearly the strengths and weaknesses of the telecommunication enterprises and as additional tools in setting future objectives in an environment which is in the throes of radical technological, structural and institutional change.

In addition, they should serve as a basis for measures to rectify and/or improve network management in all respects.

3 Regional integration, international cooperation and partnership

The African Telecommunication Observatory wishes to:

- develop a technical observation facility in Africa to feed the formation of an African perspective;
- provide input to foster a constructive dialogue between all parties;
- promote better mutual understanding through exchange and sharing of information and experience;

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1 OECD, EUROSTAT, IDATE, EITO, IREST, OMSYC, BIS STRATEGIC DECISIONS, DATAQUEST, PYRAMID, STATISTICS CANADA, etc.

- promote African telecommunications by bridging a certain communication gap between different partners (governments, regulators, operators, donors, international organizations, etc.);
- upgrade African expertise.

4 Strategy for data collection in Africa

As mentioned above, the lack of a suitable structure for local data collection is a major obstacle. Hence, it might be appropriate to contemplate a regional structure to centralize the data collected by subregional units and to reprocess and harmonize them in the light of specific regional and subregional characteristics, before forwarding them to ITU for incorporation and integration at global level.

The African Telecommunication Observatory, the idea for which first came to light at a session of the administrative council of the member countries of ESMT (Benin, Burkina Faso, Mali, Mauritania, Niger, Senegal, Togo), is intended to converge towards a regionally integrated structure of such a kind, involving all players in the African telecommunication sector and their development partners. Within this framework, the project has started up with funding from French Cooperation, the intention being to establish an institutional framework which ultimately guarantees a certain degree of independence.

To this end, and given the scale of the project, other donors are being approached.

III Teledensity and productivity in the African telecommunication sector

The performance of the African telecommunication sector is often assessed in terms of Teledensity and productivity.

III.1 Teledensity

Teledensity, expressed as the number of main lines (ML) per 100 inhabitants, provides a technical indicator of network development which for the African telecommunication sector is very low in comparison with the developed countries.

While this indicator serves some purpose, for example as a planning tool, its use to assess the performance of African operators might take a certain number of socio-economic considerations into account, thus making better allowance for the specific characteristics of the African environment.

This in no way seeks to refute the general acknowledgement that Africa's telecommunication network is relatively underdeveloped. The purpose of this paper is to provide food for thought on approaches to assess the distribution of telecommunication services in Africa and examine how action undertaken by certain African operators helps mitigate the poor performances resulting from this low teledensity.

III.1.1 Low teledensity

Numerous analyses have attributed the low telephone density in Africa to problems related to shortage of investment capital, the State monopoly environment, etc. In the same vein, the

paradoxes characterizing the sub-Saharan telecommunication sector have been highlighted and extensively elaborated upon in many reports.

Nevertheless, we also consider it important to take account of several other factors when analysing teledensity in sub-Saharan Africa, as direct comparison with the developed countries may mask certain specifically African realities.

The following may be quoted as examples:

1) The economic development gap between urban and rural areas leads operators to focus investment on urban areas (70-80% of ML), to satisfy the exigencies of financial profitability and the reimbursement of investment loans. This gap is less pronounced in developed countries.

2) Companies are relatively small and consequently use relatively few network lines in their PABXs.

3) Priority accorded to the water, health and education sectors has helped to raise the life expectancy of a population with an average birth rate of 6-7 compared with 1.6 for Europe (1.6 for France), and a population growth rate of around 3% per annum.

4) The average size of a household is estimated at 10 people. Furthermore, and of particular relevance to the analysis, the sense of solidarity and community life is far greater than in the developed countries, where people are more individualistic.

5) The inability to monitor GDP properly, given the inaccuracy of statistics in particular with regard to contributions from undeclared sectors and even a substantial part of the agricultural sector, limits the relevance of analysing performance within the African telecommunication sector using a JIPP curve (GDP/teledensity).
   It might be more appropriate to attempt a comparison with purchasing power parity, even if this includes traditional GDP.

6) The *de jure* rather than *de facto* monopoly has contributed considerably to entrenching African telecommunication operators in an approach focused on limiting anticipated losses due to non-satisfaction of so-called "demand", and consequently on increasing the number of telephone lines, rather than an approach based on profits, focused on increasing the latter for subsequent use to increase quantity.

In their investment strategies, not all operators seem to draw a distinction between "requirement" and "demand".

A declared but not viable requirement cannot be regarded as demand in economic terms.

We therefore consider that demand elasticity in relation to price should be analysed more in terms of increase in the volume of communications rather than simply in terms of the number of new lines created. In other words, network profitability and revenue do not depend simply on the total number of main lines.

The relatively high cancellation rate and difficulties in collecting dues from private customers provide a good indication of this misconception.

III.1.2 Accessibility

In their statements of general policy, all operators set themselves the objective of providing telecommunication services to as many people as possible at the lowest possible cost, or at least at a suitable cost.

Nevertheless, for reasons evoked both here and elsewhere, it is difficult for African operators to attain this objective in the short term, especially when they endeavour to provide each inhabitant or even household with a telephone line. The obstacles to be removed are numerous and varied, and it is not necessarily the ideal objective at the current stage of development in Africa.

On the other hand, and despite the low teledensity, the adoption of an appropriate technological/commercial strategy would make it possible to improve accessibility to telecommunication services both in urban and rural areas.
The example set by the Senegalese operator SONATEL is especially noteworthy in this respect, in particular its policy to develop private telecommunication centres (PTCs) in urban areas and "phone-points" or community telephones in village communities.

Our recent study in this respect highlighted the following main points:

With a teledensity of 0.95 ML/100 inhabitants, which is a more than reasonable performance for the subregion, SONATEL has achieved the following results with its PTC policy:

(It should be noted that a PTC is a centre where a private operator, under specific terms set down in a contract with the main operator, sells telecommunication services to the public.)

1) The number of PTCs rose from 541 in 1993 to 2 042 in 1995, i.e. it quadrupled in three years.

2) The number of main lines in the PTCs rose from 903 in 1993 to 3 272 in 1995, i.e. it tripled over the same three years. In 1995, PTC main lines (telephone and fax) represented 4.1% of SONATEL's total.

3) The number of permanent jobs in the PTCs rose from 1 082 in 1993 to 4 084 in 1995, representing twice SONATEL's total permanent staff. The jobs represent 5.3% of all private-sector paid jobs in Senegal.

4) Turnover realized by the PTCs on SONATEL's behalf represented 5.5% of SONATEL's total turnover in 1994, and 15% of total telephone invoicing.

   In 1995, it may be estimated that almost a quarter of outgoing calls from Senegal were made from the PTCs, from public telephone booths or from telecommunication centres belonging to SONATEL.

5) The PTC's turnover per ML represents four times that of SONATEL.

6) The cost of a local three-minute telephone call is 100 CFA francs in the PTCs, which allows SONATEL to sell the telephone "retail" and make it accessible to the general public.

   The effect of this strategy is to increase the volume of communications by lowering the cost of services to suit the population's social conditions and by adapting to the local economic environment in which everything is sold retail, thus at the same time mitigating the adverse effects of low teledensity.

   The policy of phone-points in rural areas is based on the same strategy.

III.2 Productivity

The productivity indicator, expressed as the number of staff per 1 000 ML, is also relatively poor for African telecommunication operators compared with results obtained in developed countries. The indicator varies from 20 in the best cases, 45-50 on average, to as much as 80 for certain operators, compared for example with five for France Telecom.

While these poor results reflect overstaffmg in relation to the low number of telephone lines, the following may be identified as fundamental causes:

1) For some time now, staff have been engaged on the basis of social considerations, with the operator under the influence of a public administration which for various reasons has to find employment.

2) When implementing major investment prograrnmes, operators have often recruited massively and then been obliged to keep staff on once the work has been completed, even if the original employment contracts were fixed term.

3) Network topology, dictated by the urban structure of areas to be served, obliges the operator to have sufficient for implementation and maintenance, even if the amount of infrastructures is small. In the light of distances and transportation difficulties, a minimum number of staff is required in remote areas in order to ensure network reliability.

4) A further handicap has sometimes resulted from delays in introducing new technologies requiring fewer staff.

5) Local labour is often less costly than mechanization.

6) The long recognized unavailability of qualified local subcontractors has sometimes obliged operators to carry out themselves work which operators in developed countries would usually contract out.

The past therefore constitutes a heavy burden, but one which African operators are fortunately beginning to shake off, with the encouragement and assistance of donors.

Thus, most operators currently apply a zero-growth policy to staffing, while raising the proportion of managerial staff and staff qualification levels. This is facilitated by introducing new technologies requiring fewer staff.

Operators are consequently recording a sustained increase in added value per staff member, even though the average wage is increasing.

Similarly, the ratio of staff costs to added value is developing positively for a large number of operators, and payrolls (GINI index) show a shift of concentration towards higher grades.

As the majority of employees earn the lowest salaries, the financial consequences of overstaffmg are often negligible save in so far as it undermines any potential spirit of enterprise. The workforce variable thus has no very significant financial effect on the potential benefits of capital intensity.

On the other hand, the following points may well be more serious:

Individual performance, which in the area of a leading-edge technology like telecommunications should increase, actually decreases owing to the scientific isolation of African managerial staff, and their ability to adapt to technological change declines sharply with age.

In addition, the average retirement age is 55, but managers are relatively quite old (27, 28 and even 30) when they take up their posts.

This situation poses many problems with regard to amortization of training investments.

Ratios (staff costs/added value, staff costs/operating costs, added value/workforce) are certainly highly influenced by the tariffs applied and international traffic flow, however their analysis in conjunction with productivity is a useful tool for assessing staff performance.

IV Conclusions

The importance of telecommunication development indicators requires no further demonstration, especially for the developing countries, whose need to increase their potential is greater.

We therefore consider it extremely important for Africa, with the assistance of international cooperation, to equip itself with an effective means to produce regular strategic information on trends in the telecommunication sector, and respond more promptly and with greater accuracy to the requests of ITU, which will ultimately have global data at its fingertips once it has aggregated all data supplied by all regions.

We are certainly not aware of the existence of any international reference standards or thresholds either for teledensity or productivity; however, comparison between geographical areas with roughly the same characteristics could provide operators with a basis for their strategies.
Furthermore, in our opinion a valid indicator should be sufficiently expressive and easy to calculate, as in the case of teledensity and productivity; these are definitely useful elements of an initial approach to telecommunication development assessment.

The concept of accessibility which is of concern to African operators may be characterized by three factors:

- line availability (good working order)
- remoteness, or average minimum distance to be covered to reach the line (geographical distribution or dispersion)
- price of service.

As an indicator, accessibility is certainly difficult to calculate even if one intuitively perceives an improvement.

Taking account of the specific characteristics of Africa, new avenues of thought may open up, which we believe, once explored, may lead to results and thence solutions, if only partial, to the problem of the chronic underdevelopment of the African telecommunication sector, particularly in the context of the radical changes which are afoot.