EXPERIENCES ON TURKISH STATISTICAL BUSINESS REGISTERS

"Training Course on Business Surveys "

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CONTENT

- A Brief History

- Turkish Statistical Business Registers (SBR) Methodology

- Users

- Maintenance

- Dissemination & Confidentiality

- Quality

- Other Studies
  - ✓ *Enterprise Groups*
    - ❖ *Profiling*
  - ✓ *Business Demography*

- Future of SBR

A BRIEF HISTORY

- Last General Census of Businesses in 2002

- Statistics Law (2005) to comply with the EU and national needs

- Decide to use Ministry of Finance (MoF) records as the main source

- A legal agreement on data transfer in 2005

- Transformation into statistical units

- Changes and improvements on the methods and processes in time

- Enriching the data sources in time

AIM

- To establish a SBR based on administrative sources

- To include common statistical units comparable

- To produce demographic variables

- To analyze Multinational Enterprise Groups at global level

- To establish an SBR a comprehensive source for business surveys

METHODOLOGICAL SOURCES

- EU Regulation no 177/2008 of The European Parliament and Council

- Regulation No 696/93 on the statistical units

- Business Registers Recommendations Manual by Eurostat

- Guidelines on Statistical Business Registers by UNECE

- Business Demography Manual by OECD-Eurostat

- Study Visits, Trainings, Traineeships, Meetings, Working Groups etc.

ELEMENTS OF METHODOLOGY

- Statistical (and non statistical) units

- Scope (coverage)

- Classifications

- Characteristic of Units: Variables

- Main (and supplementary) data source(s)

- Maintenance

USE of ADMINISTRATIVE SOURCES

Using administrative sources is useful;

- Cost

- Response Burden

- Data Quality

Using administrative sources is possible;

- Legal Ground

- Use of unique identifier

- Good coverage

- Cooperation

- Public opinion

KEY FEATURES OF STATISTICAL BUSINESS REGISTERS

- Registered units (local units, enterprises, enterprise groups)

- Contributing to Gross Domestic Product

- EU standards and norms

- Classifications

- Comparability

- Up to date information

SCOPE

Geographical Scope: Whole Turkey

Activity Scope: **Except**

- *public adm.and defense; compulsory soc. sec. (**Section O**)*
- *Activities of Households (**Section T**)*
- *International Organizations (**Section U**)*
- *Renting privately (Nace Rev.2 code **6820**)*

Status of Being Active:

- *All units active in the reference period*
- *The units in through the process of liquadation*

SCOPE

Economic Scope: All enterprises contributing to the Gross Domestic Product, their local units, legal units that make up enterprises and enterprise groups

P.S. For Turkish case, tax payers paying

- ✓ *annual income tax for commercial income*
- ✓ *corporate tax*
- ✓ *value added tax*

Scope for units: All enterprises contributing to the Gross Domestic Product, their local units, legal units that make up enterprises and enterprise groups

- ✓ *Legal unit*
- ✓ *Enterprise*
- ✓ *Local unit*
- ✓ *Enterprise Group*

SCOPE

Scope of variables

- ✓ *Identification variables*
- ✓ *Contact variables*
- ✓ *Geographical variables*
- ✓ *Activity information*
- ✓ *Classifications*
- ✓ *Size-classes*
- ✓ *Dates of changes*
- ✓ *Source of information*

LEGISLATION

- Regulation (EC) no 177/2008 of The European Parliament and of the Council establishing a common framework for business registers for statistical purposes

- Council Regulation (EEC) No 696/93 on the statistical units for the observation and analysis of the production system in the Community

CLASSIFICATIONS

- Activity Classification
  - ✓ *NACE Rev.1 for years 2005-2008*
  - ✓ *NACE Rev.2 from 2009 onwards*

- Regional Classification
  - ✓ *NUTS I   12 Region*
  - ✓ *NUTS II   26 Region*
  - ✓ *NUTS III   81 Province*

VARIABLES
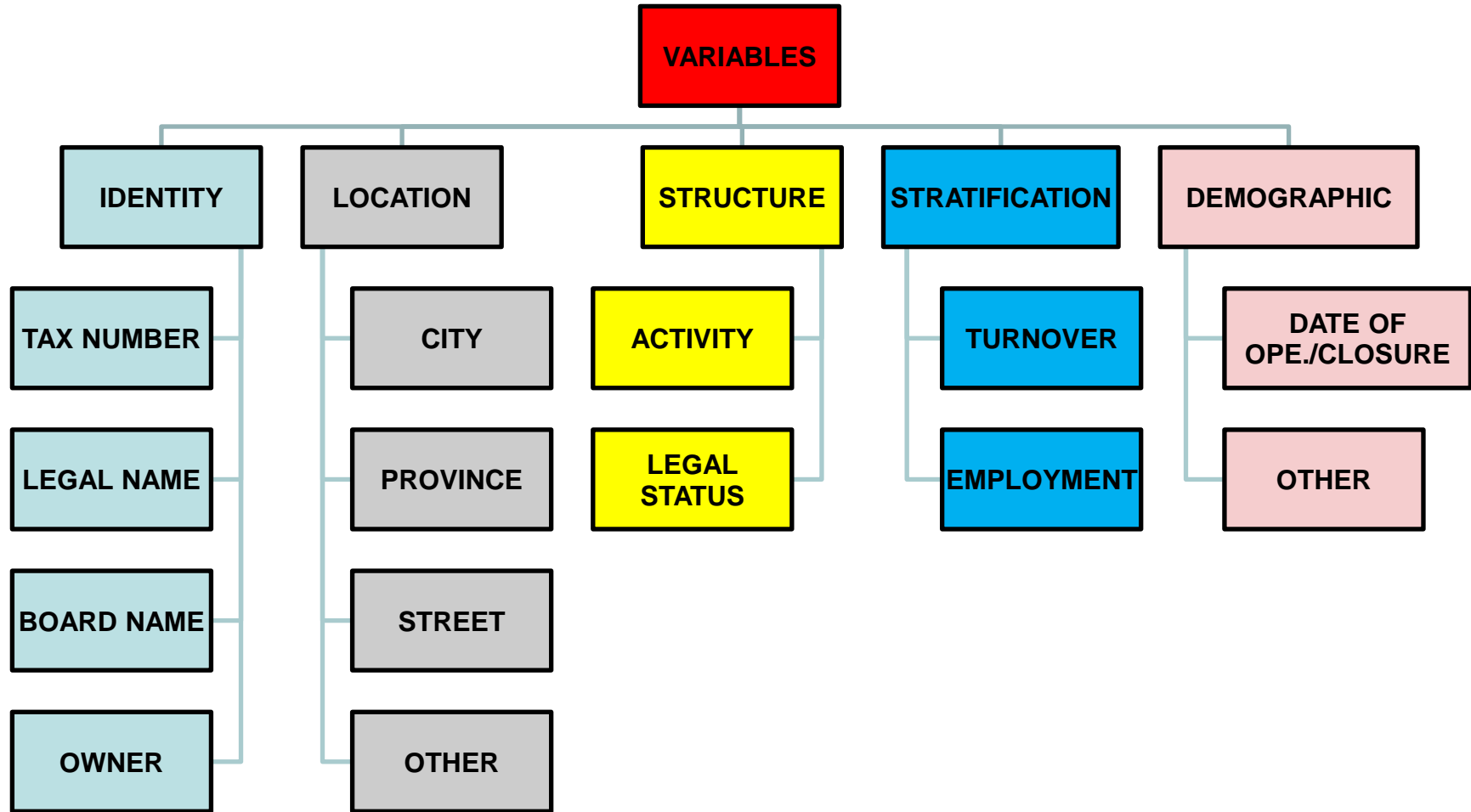
UNITS IN SBR

Some units not statistical:

- **Legal unit** - Recognized by law and registered officially
  - ✓ *Legal persons*
  - ✓ *Natural persons*
  - ✓ *Local legal units*

- **Administrative units**

  - ✓ *VAT, TAX, Social security*

- **Operational unit**
  - ✓ *Organizational*
  - ✓ *Productive*

- **Observational unit**

  - ✓ *The unit about which data are reported*

- **Reporting unit**
  - ✓ *Legal unit*
  - ✓ *Administrative unit*

STATISTICAL UNITS IN BR

Enterprise is the smallest **combination of legal units** that is an organizational unit producing goods or services which benefits from a certain degree of **autonomy** in decision-making, especially for the allocation of its current resources

- ✓ *Complex enterprises consist of more than one legal unit*

Local Unit is an enterprise or part thereof (a workshop, factory, warehouse, office etc.) situated in a **geographically identified** place

- ✓ Movable activities (Taxi, tourist busses)
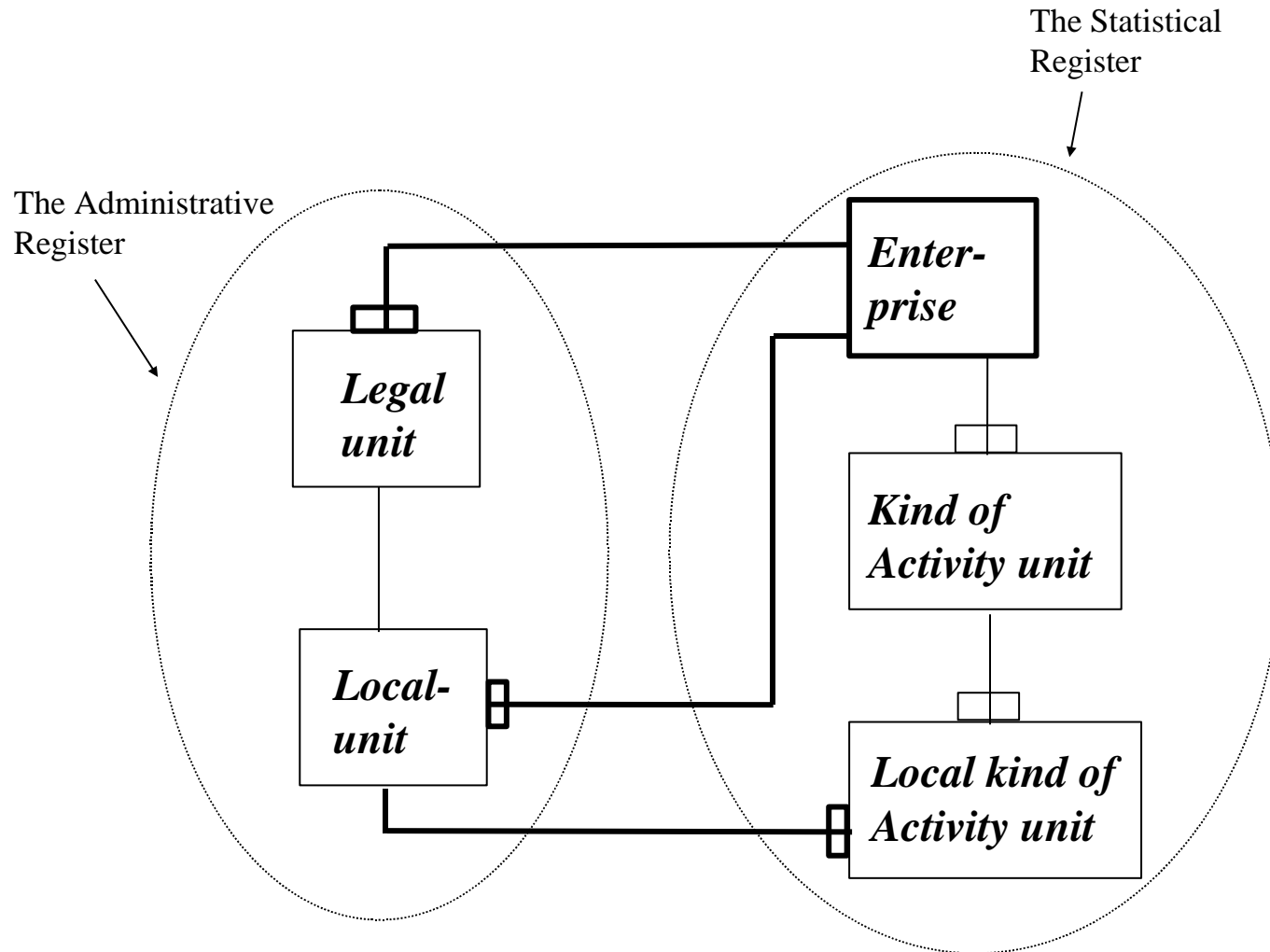- ✓ Not permanent activities (External source of ancillary activities)

STATISTICAL UNITS IN BR

Enterprise Group is a **set of legal units** bound together by legal and/or financial links under the same control
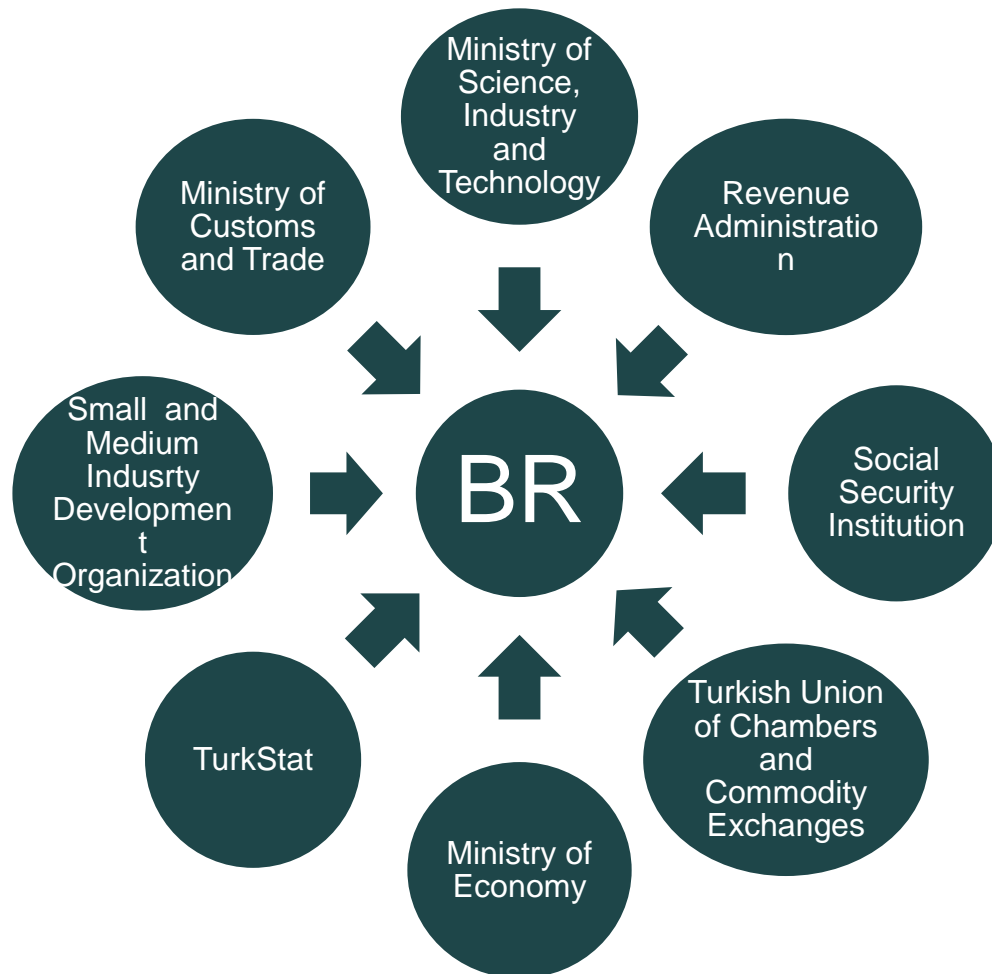
- ✓ *Association of enterprises*
- ✓ *Legal and/or financial links*
- ✓ *Used for studies of concentration*
- ✓ *Used for profiling.*
- ✓ *Used to measure globalisation*

* Why we generate standard statistical units is to collect integrated, consistent, comparable and unduplicated data across all businesses and sectors

UNITS IN SBR

The Statistical Register

The Administrative Register

Enter-prise

Legal unit

Kind of Activity unit

Local-unit

Local kind of Activity unit
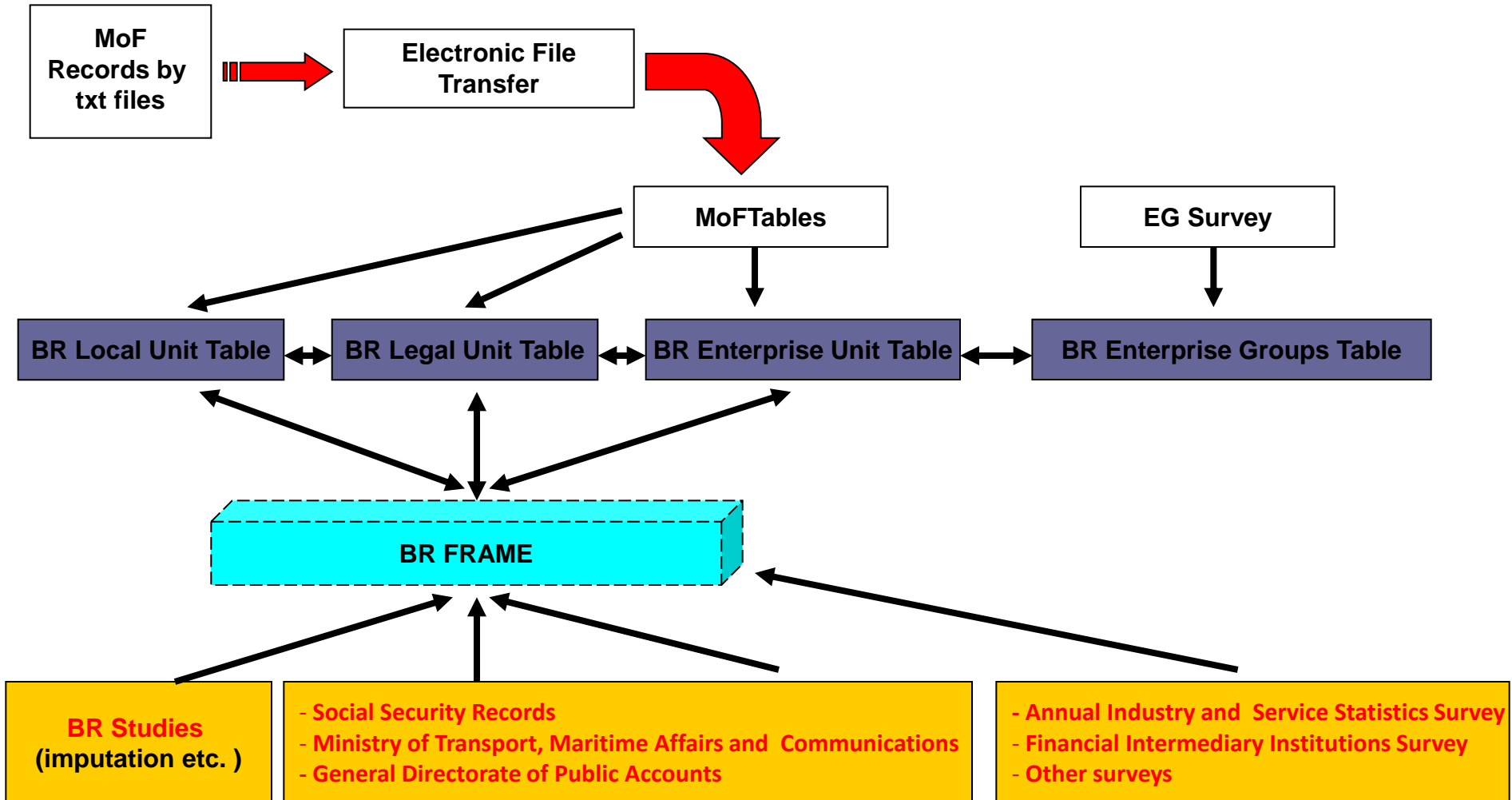
SOURCES IN BR

FRAMEWORK

ESTABLISHING SBR

- Long term vision – good for IT staff
  - ✓ *A survey feedback mechanism*
  - ✓ *A field for tracking survey outcomes, response rates and other metrics*
  - ✓ *A module to track respondents and response burden*
  - ✓ *A source of register-based statistics*
  - ✓ *A source for national and international data exchange*

ESTABLISHING SBR

- Over-extend resources in the early stages by trying to cover all types of enterprise is not suggested
    - ✓ *A new SBR must focus on the part of the population significant economically and that can be most reliably captured and reflected*
    - ✓ *Informal economy to what extent to be covered*

- Planning a system providing both live and frozen versions

ESTABLISHING SBR

- Governance and organizational consideration
    - ✓ *The SBR, if possible, a separate organisational unit within NSI*
    - ✓ *Relationships with users/sources*
    - ✓ *Legislative framework*
    - ✓ *Funding phase*
    - ✓ *Conceptual development – defining the purposes, roles etc.*
    - ✓ *Human Resources*
    - ✓ *Operations and Data Maintenance*

ESTABLISHING SBR

- IT consideration
  - ✓ *Project management methodology – project is necessary*
  - ✓ *Software development methodology*
  - ✓ *Solution architecture*
  - ✓ *Database&Database Management System options*
  - ✓ *Programming requirements – User interfaces etc.*
  - ✓ *IT environments – version of the system etc.*
  - ✓ *Programming language*
  - ✓ *Relationships with other systems and registers*
  - ✓ *Establishing a unique identifier for statistical units*
  - ✓ *Tools/software for record linkage – data cleaning etc.*
  - ✓ *Job scheduling software – processing at night or weekend*
  - ✓ *Documentation*

ESTABLISHING SBR

- Data retention
  - ✓ *Tracking changes – logs etc.*
  - ✓ *Frequency and content of snapshots*
  - ✓ *Administrative updates – keeping track of updates*
  - ✓ *Documentation*
  - ✓ *Information management directive*
  - ✓ *Archiving and deleting – rules for which part not to be retained*

PREPARATION OF TURKISH ANNUAL SBR FRAME

- Oracle database

- MoF records in text file

- Imported into our database through automated procedures

- The problems faced during the data transmission are detected and corrections are made

- Calculations in terms of turnover and employment

- Matching with the previous BR frame

PREPARATION OF TURKISH ANNUAL SBR FRAME

Updating from Surveys

- Annual Industry and Service Statistics Survey with respect to address components, turnover, number of persons employed and activity figures

- Financial Intermediary Institutions Survey

- Other surveys

INSTITUTIONAL SECTOR CLASSIFICATION

- Institutional sectors according to the guidelines of the 2008 System of National Accounts
    - ✓ *Non-financial corporate sector (S11)*
    - ✓ *Financial corporate sector (S12)*
    - ✓ *General government sector (S13)*
    - ✓ *Household sector (S14)*
    - ✓ *Non-profit institutions serving households (S15)*

INSTITUTIONAL SECTOR CLASSIFICATION

Corporations, government units and households are naturally different from each other in their economic objectives, functions and behaviour.

In relation to the three basic economic functions:

- ✓ *Production of goods and services*
- ✓ *Consumption to satisfy human needs*
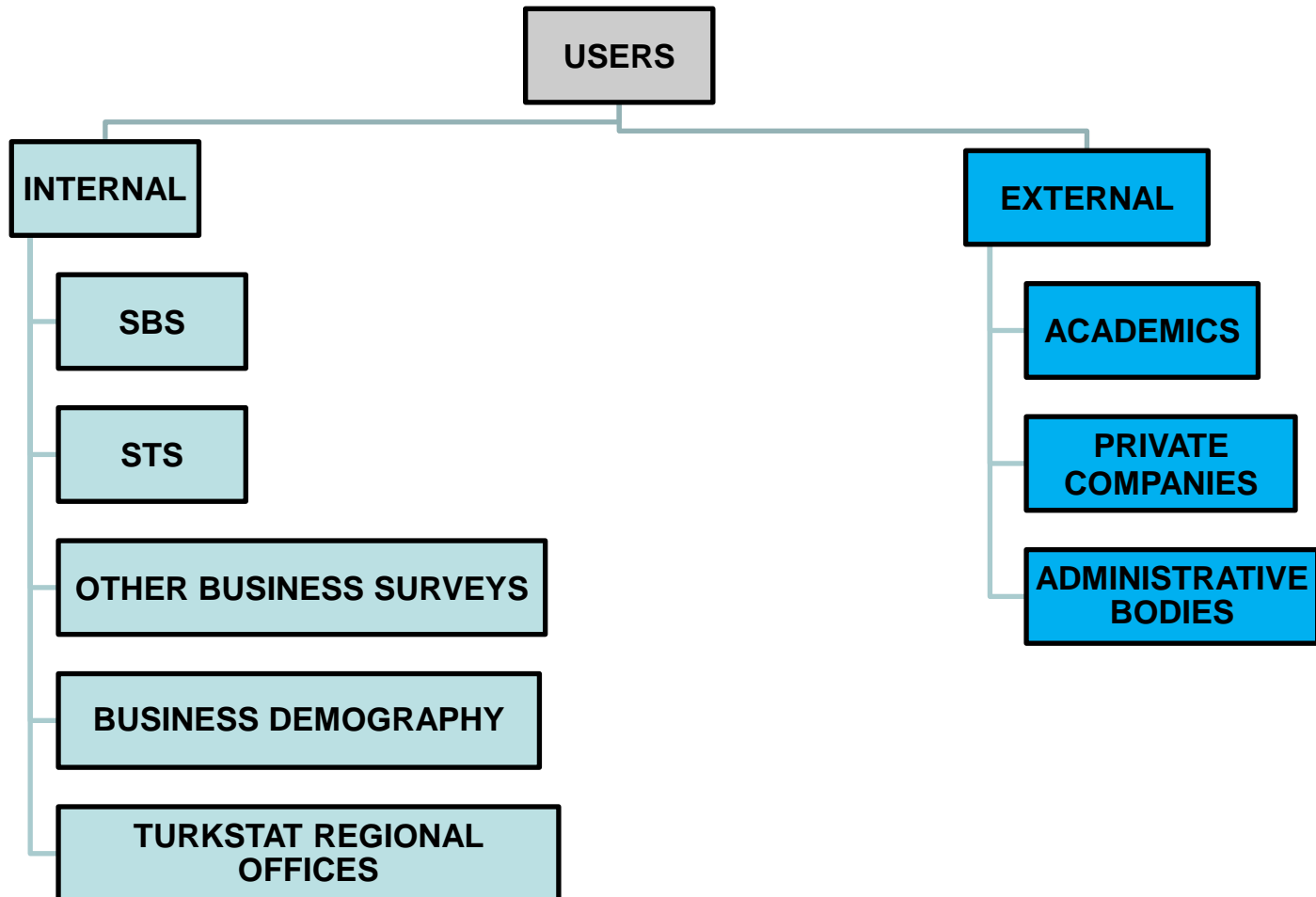- ✓ *Accumulation of various forms of capital*

INSTITUTIONAL SECTOR CLASSIFICATION

- Corporations produce and sell for the market

- Government units organize and finance the provision of goods and services to individual households and to the community as a whole. They may produce most of these goods and services themselves but the products are either provided free or at prices determined by considerations other than purely market forces

- Households are primarily consumers but some of them are also producing goods and services for the market. When production takes place in the household but not in a separate legal entity owned by the household, it is described as an unincorporated enterprise. It is then part of the institutional sector households

INSTITUTIONAL SECTOR CLASSIFICATION

- Non Profit Institutions are behaving mainly as nonmarket producers, producing goods and services not for the generation of income or profit

- Non profit institutions serving households. Mainly non-governmental social institutions, such as churches, social clubs, charitable, associations

USERS OF BR

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                          ┌──────────┐
                          │  USERS   │
                          └──────────┘
         ┌───────────────────┴───────────────────┐
   ┌──────────┐                            ┌──────────┐
   │ INTERNAL │                            │ EXTERNAL │
   └──────────┘                            └──────────┘
        │                                       │
   ┌──────────┐                          ┌──────────────┐
   │   SBS    │                          │  ACADEMICS   │
   └──────────┘                          └──────────────┘
        │                                       │
   ┌──────────┐                          ┌──────────────┐
   │   STS    │                          │   PRIVATE    │
   └──────────┘                          │  COMPANIES   │
        │                                └──────────────┘
 ┌────────────────────────┐                     │
 │ OTHER BUSINESS SURVEYS  │              ┌──────────────┐
 └────────────────────────┘              │ADMINISTRATIVE│
        │                                │    BODIES    │
 ┌────────────────────────┐              └──────────────┘
 │  BUSINESS DEMOGRAPHY    │
 └────────────────────────┘
        │
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 │   TURKSTAT REGIONAL     │
 │        OFFICES          │
 └────────────────────────┘
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USERS OF BR

<u>Sampling Framework:</u> SBR is used for Annual Industry and Service Statistics Survey as a frame

<u>Estimation dimension:</u> For all sectors, in terms of enterprise NACE Rev.2 4 digit-level estimations for Turkey

<u>Full enumeration limits:</u> After estimation dimensions, full enumeration limits are determined for some sectors,

- ✓ *All enterprises having more than 20 employees,*
- ✓ *By NACE Rev. 2 4-digit-level, some classes are fully enumerated*

MAINTENANCE

The key objective of maintenance

- Updating the coverage and content of SBR

- Taking into account the continuity and stability rules, according to a well defined calendar and as information sources allow

- Providing surveys with sampling frames accurate and up to date

MAINTENANCE

Maintenance Strategy

- SBR has to be updated correspondingly (with real world)

- Constant updating of the SBR in terms of coverage and content
  - ✓ *New statistical units*
  - ✓ *Changes in the values of the characteristics*
  - ✓ *The dates of changes should be known and recorded*

- The sources of information - administrative sources and surveys

- The maintenance groups (data is divided)

MAINTENANCE

Maintenance Strategy

- The time dimension - timing of the updates, the need for continuity and
stability rules, and use of the historical register

- SBR Survey

- Profiling

- Live Register

- Dealing with conflicting information - which source and value to use
  - ✓ *Updating priorities algorhytms*

MAINTENANCE

<u>Maintenance Strategy</u>

- Frozen frames – never direct updating
- Historical register
  - ✓ *Births, deaths and continuity of units*
    - ❖ *Change of Ownership*
    - ❖ *Restructuring within an enterprise*
    - ❖ *Concentration (merger&takeover)*
    - ❖ *De-concentration (split-off, break-up)*

  - ✓ *Size development - units growing*
  - ✓ *Analysing changes in the characteristics of units*
  - ✓ *Reconstructing the state of the SBR as of a past date or reference period*

MAINTENANCE

<u>Maintenance Procedures</u>

- Taking account of different user needs

- Treatment of errors - A difference between SBR and the real world

    ✓ *Determine whether errors have occurred*
    ✓ *Decide whether they should be corrected; and if so*
    ✓ *Decide how and when to correct them*

MAINTENANCE

Maintenance Procedures

- Types of frame errors
  - ✓ *Errors in existence - Falsely active units or vice versa*
  - ✓ *Errors in identification characteristics - names, addresses etc.*
  - ✓ *Errors in stratification characteristics legal form, economic activity, size class*

- Stability rules (resistance rules): No-update-population

DISSEMINATION

Before BR was not playing a role for producing statistics directly

- Number of Enterprises by region, economic activity, size classes

- Business Demography indicators

- Individual/micro data to the outside the NSI
  - ✓ *Free of charge or for a fee*
  - ✓ *In print or electronically*
  - ✓ *Some charasteristics of the units*
  - ✓ *Online access/upon request*

DISSEMINATION

Condition of Dissemination

- No discrimination regarding the type of user

- Quality tests before publising

- Annually, quarterly or monthly

CONFIDENTIALITY

<u>Confidentiality Approach</u>

- General approach is that no data should be published that would allow a user to determine the value of a characteristic for a specific unit

- Ensuring confidentiality is to publish only data values that refer to more than a specified number of units, typically three or more units. In a table where a certain data cell refers to less than this number of units, the cell value is suppressed and replaced by a symbol indicating that the value is available but confidential.

- A stronger approach is to apply dominance rules. A cell in a table is confidential, if a specific number of the largest units, e.g. the three largest units, in this cell contribute more than a specified proportion, e.g. 90%.

CONFIDENTIALITY

Secondary Subpressing

- Suppression of confidential cells must be accompanied by further cell suppression to prevent the values in the suppressed cells being calculated from the values in other cells.

- For example, a two dimensional table including row and column totals and the one cell value has been suppressed because it is confidential. This value can readily be computed from the other cell values in the same row (or column) and the row (or column) total. Thus the values of other cells that are not themselves confidential have to be suppressed

- Complementary suppression have to be applied not only within a single table but also between the tables to be published so that confidential information cannot be disclosed by combining different tables

CONFIDENTIALITY TREATMENT IN TURKISH SBR

- SBR Data is published by NACE 4-digit-level, NUTS Level and size classes

- Number of Enterprises is not confidential in principle

- Employment is confidential if coming from # of enterprises less than 3

- Micro data sharing is not possible with an exception
  - ✓ *Institutions under Off.Stat.Prog. can see micro variables already available to the public (activity, name and location)*

- Number of enterprise by size class whose cell is less than 3 is confidential

- Secondary confidentiality rule is applied

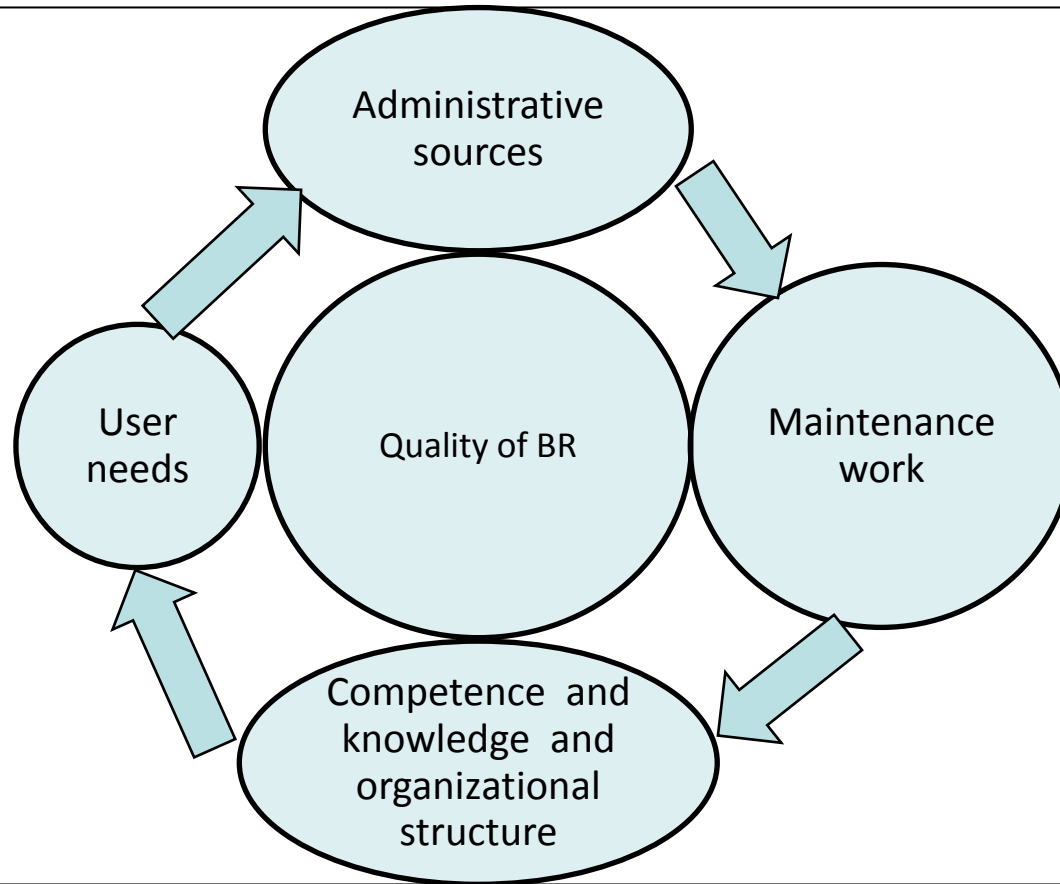# QUALITY IN BR

<u>Code of Practise 15 principles</u>
- Pr1: Professional independence
- Pr2: Mandate for data collection
- Pr3: Adequacy of resources
- Pr4: Quality commitment
- Pr5: Statistical confidentiality
- Pr6: Impartiality and objectivity
- Pr7: Sound methodology
- Pr8: Appropriate statistical procedures
- Pr9: Non-excessive burden on respondents
- Pr10: Cost effectiveness
- **Pr11: Relevance**
- **Pr12: Accuracy and reliability**
- **Pr13: Timeliness and punctuality**
- **Pr14: Coherence and comparability**
- **Pr15: Accessibility and clarity**

Quality in BR

QUALITY IN BR

Definition: Meeting the user needs. Which User? Priorities?

QUALITY IN BR

Quality Criteria

- Relevance - Relevant to the user needs (units, variables, population)

- Accuracy - Reflecting reality – Quality Survey?

- Timeliness and punctuality - How often update?

- Accessibility and clarity - Users can access?

- Comparability - Geographically, by time etc. (panel data – business demography)

- Coherence - Internal and external consistency

QUALITY IN BR

Reasons for Quality Defects

- Gaps in declaration procedures

- Inaccurate declarations

- Coding errors

- Falsely active units or vice versa

QUALITY IN BR

Possible Quality Improvements

- Improvement of data transfer channels

- Efficient use of data source

- Improving metadata

- Increase of users

- Improvement of data processing

- Focusing on significant units

QUALITY IN BR

Possible Quality Improvements

- Frequency of updates

- Better coverage

- Comparison with other sources

- Cost – response burden or cost to the statistical system

QUALITY IN BR

Possible Quality Measures

- Control surveys

- User needs surveys

- Coverage checks (Comparison with other sources)

- Process quality audits (clerical jobs and automated processes)

- Cost – response burden or cost to the statistical system

QUALITY IN BR

SBR Quality and Surveys

SBR errors can have a big impact on the processes and results of surveys based on the SBR.

Non-response and coverage problems may result in significant non-sampling errors. These two problems are inter-related and can be attributed to SBR errors.

- ✓ *Impossible to contact a unit included in the frame because the contact characteristics are wrong*
- ✓ *Units wrongly included in the frame may be selected for the sample and then found to be out of scope, thus reducing the effective sample size*
- ✓ *The impact of frame errors on survey estimates is a measure of the accuracy of the SBR*

Enterprise Groups

- Compulsory to be kept in national BR

- Lack of administrative sources and quality

- Negotiations with other administrative bodies

- Field Study - since 2008 about 4000 units.

PROFILING

<u>General</u>

- Delineation of the enterprise statistical unit

- Delineation of multinational enterprise groups

- Analysis of country experiences in profiling large and complex enterprises and enterprise groups

- Sharing best practices in the coding of statistical units

PROFILING

What is Profiling?

- Practice of using company accounts, interviews with senior enterprise officials, to build and define the structure of enterprises, mainly large complex enterprise groups

- Contact with the enterprise

- Using published accounts

- Significant contribution to the country's GDP

- Each individual SBR profiler has an assignment of large, complex enterprise groups for which he/she is responsible for reviewing and updating

PROFILING

Steps

- Criteria. Which units?

- Gather preparatory material

- Searching websites and examining annual accounts and reports

- Contact is made with the controlling enterprise in the group

Business Demography

- Lack of administrative sources and quality

- Harmonized Data Collection since 2008

- Negotiations with other administrative bodies

Future of SBR

- Profiling

- SBR the backbone of economic statistics-Development of new statistics

- Better use of administrative data sources

- Better international comparability
  - ❖ *Development of internationally comparable quality indicators*
  - ❖ *Development of an international quality assessment framework*
  - ❖ *Use/integration of international administrative identifiers in SBR*

Future of SBR

<u>Methodological developments</u>

- Improvements of censuses where administrative sources are not available or of poor quality

- Evaluation of database software packages for SBR

- Coverage of the non-observed economy

- Analysis of software services/methods for SBR maintenance that could be shared between countries

- Analysis of various forms of frozen frames with respect to their use for business statistics

- Analysis of methods of creation of identifiers and check digits

- Development of methods for adjustment of undercoverage.

- Development of input data validation methods

THANK YOU