

TWINNING CONTRACT

JO/13/ENP/ST/23

Strengthening the capabilities of the Department of Statistics in Jordan



MISSION REPORT

on

Activity 1.19: Software solutions for National Accounts

Mission carried out by
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List of Abbreviations

DoS	Department of Statistics of Jordan
ISTAT	Italian National Institute of Statistics
SNA93	United Nation System of National Account 1993
SNA08	United Nation System of National Account 2008
I-O	Input-Output Table
SUT	Supply & Use Table
CPC	Consumer product classification
ISIC	International standard industrial classification
ToR	Terms of Reference

1. General comments

This was the an Activity devoted to “Software solutions for National Accounts” within Component 1: National Account.

The purposes of the mission were:

- ✓ To present different software solutions relating to different stages of the national accounts work
 - Organization and storage of basic data
 - Tools for the compilation of data
 - Tools for aggregating the data into the sequence of accounts
 - Dissemination of data
- ✓ To discussions what is the best solution for DoS and recommendations for future work

The consultants would like to express their thanks to all officials and individuals met for the kind support and valuable information received during the stay in Jordan which highly facilitated their work.

This views and observations stated in this report are those of the consultants and do not necessarily correspond to the views of EU, DoS or Istat.

2. Assessment and results

The main activities carried out were:

1. Presentation of the Italian experience within the National Account Division regarding:
 - a. The organization and process;
 - b. Statistical tools and customers applications;
 - c. Data storage system;
 - d. The use of tools in the different phases of work
2. meeting with National Account components about their:
 - a. organization
 - b. estimate processes
 - c. data source
 - d. intermediate and final results
 - e. tool used

The department of National Account is organized in three division:

- Annual Accounts
- Input-output
- Quarterly account

The input- output division is implementing also the Supply and Use table.

In the Annual Account Division there are experts on branch of activities and they collaborate at the construction and analysis of SUT.

In generally DoS staff mainly gets information, directly in Excel, from database Oracle, by Oracle Discoverer, and elaborates it in Excel producing:

- Annual account
- I-O and are implementing SUT
- Quarterly account

In the next future DoS staff would implement production with other accounts as for example Regional Accounts.

DoS staff is going to adopt the new system SNA2008 instead of SNA1993 and increasing the elaboration and transformation of the original data.

Every new elaboration is performed by Excel, also SUT balancing with RAS method, with a large amount of sheets and workbook that are stored in each PC.

Currently, monitoring procedures are only based on manual check made directly on the excel data. In case of incoherence in the source data, the staff contacts the Department of Economics to investigate and eventually correct the original data.

Regarding quarterly accounts, DoS staff receives input data in excel format from surveys and administrative sources producing four aggregates by Isic.

Currently there are no adjusted estimations as the elaborations are all made with excel except for the disaggregation of annual data that is operated by a Canadian software called "Bench.exe" with the Denton method. A consolidated solution for the seasonal adjustment is represented by the software Demetra+.

However, to adopt this tool, it would be desirable to provide a methodological support.

The dissemination is still made only in pdf and Excel format. However the staff is testing the introduction of PC-Axis software to publish data also in dynamic format.

3. Conclusions and recommendations

The Department of National Accounts is well organized and efficient even if the number of people employed is limited to only twelve units. However, to implement new methodologies and produce more typologies of accounts it would be needed to increase the number of human resources involved in the process.

Currently the treatment of data for Annual Accounts is made by Excel. To increase the speed of elaborations and to improve the results, a possible alternative could be represented by the software R, a free license statistical software that also allows to read and write the data in different formats (including Oracle). DoS staff is not yet experienced in the use of this tool so, if this solution will be taken in account, it would be recommended to provide a training course.

An alternative solution for monitoring the results could be the implementation of a web based application similar to the Italian experience (DCCNweb annex 3)

To prevent the loss of data in case of hardware crash, it would be recommended copying files over to a protected system server that staff can access when those files are needed. This action should be implemented in collaboration with the IT staff.

It is also suggested; in according to the policy of DoS, to storage the final results of the every edition, at the lower details, in a centralized repository like Oracle database. It would be the access point for following research and for dissemination by PC-Axis.

Regarding the quarterly accounts DoS staff has already planned to implement in the next future the seasonal adjustment; for this purpose it would be useful to provide methodological support and technical support.

Annex 1. Terms of Reference

Component 1: National Accounts

Activity 1.19: Software solutions for National Accounts

0. Mandatory results and benchmarks for the component

- The national accounts system in Jordan updated to SNA 2008 (Apr 2015)
- The national accounts system in Jordan will cover the informal sector (Apr 2015)
- Assessment report on current situation (Jan 2014)
- Review of the GDP methodology (Apr 2014)
- Plan for how to change base year in the fixed price calculations (Jan 2015)
- Plan for how to improve the current accounts (Jan 2015)
- Present and discuss the concept of different types of agricultural accounts (Jan 2015)
- Data sources, compilation methods, and balancing in relation to supply and use tables reviewed and updated towards SNA08 principles (Apr 2015)
- Provide recommendations on how to update input-output tables (Apr 2015)
- Update the methodology for calculation the informal sector (Apr 2015)

1. Purpose of the activity

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2. Expected output of the activity

- Recommendations prepared on which software solutions support the best the national accounts work in DoS in the different stages of the compilation of national accounts
- DoS staff introduced to the Italian and in general European experiences in IT solutions for the compilation, dissemination and storing of National Accounts data

3. Participants

DoS:

Mr Moawiah Alzghoul Director of National Accounts Directorate, component leader

Annual national accounts

Amal Abu Afeefeh - Head of the Annual Accounts Division

Khairallah Almarzoug

Farhan Mohammad

Loay Alrawashdeh

Ali Zaitoun

Ayman Nasir

Input-output division

Murad Bani-Hamad

Murad Omari

Quarterly accounts division

Walid Battah - Head of the Quarterly Accounts Division

Jaber Alfazza

Walaa Gharram

MS experts

Ms. Elena Forconi, Head of the Unit “Support, monitoring and verification of the planning and design of software development” of the Department for the National Accounts and Business Statistics, ISTAT.

MX. NN, ISTAT

Programme for the mission

Time		Place	Event	Purpose / detail
Sunday, morning	08.30 – 10.00	Hotel /DoS	Meeting with RTA	To discuss the programme of the week.
Sunday, morning	10.00 – 12.00	DoS	Meeting with BC Component Leader and BC Experts	Discussions of the week's programme Presentations by DoS on the current situation regarding the use of tools for the national accounts work in DoS.
	12.00 – 01.00		Break / Preparations / Report writing	Break / Preparations / Report writing
Sunday, afternoon	01.00 – 03.30	DoS	Meeting with BC Component Leader and BC Experts	Presentation by experts on the current use of IT tools in the Italian National Accounts.
	03.30 – 04.00		Preparations / Report writing	Preparations / Report writing
Monday, morning	08.30 – 09.00	DoS	Preparations / Report writing	Preparations / Report writing
	09.00 – 12.00		Meeting with BC Component Leader and BC Experts	Continued.
	12.00 – 01.00		Break / Preparations / Report writing	Break / Preparations / Report writing
Monday, afternoon	01.00 – 03.30	DoS	Preparations / Report writing	Preparations / Report writing
			Meeting with BC Component Leader and BC Experts	Continued.
	03.30 – 04.00		Preparations / Report writing	Preparations / Report writing
Tuesday, morning	08.30 – 09.00	DoS	Preparations / Report writing	Preparations / Report writing
	09.00 – 12.00		Meeting with BC Component Leader and BC Experts	Continued.

	12.00 – 01.00		Break / Preparations / Report writing	Break / Preparations / Report writing
Tuesday, afternoon	01.00 – 03.30	DoS	Meeting with BC Component Leader and BC Experts	Continued.
	03.30 – 04.00		Preparations / Report writing	Preparations / Report writing
Wednesday, morning	08.30 – 09.00	DoS	Preparations / Report writing	Preparations / Report writing
	09.00 – 12.00		Meeting with BC Component Leader and BC Experts	Continued.
	12.00 – 01.00		Break / Preparations / Report writing	Break / Preparations / Report writing
Wednesday, afternoon	01.00 – 03.30	DoS	Meeting with BC Component Leader and BC Experts	Continued.
	03.30 – 04.00		Preparations / Report writing	Preparations / Report writing
Thursday, morning	08.30 – 09.00	DoS	Preparations / Report writing	Preparations / Report writing
	09.00 – 12.00		Meeting with BC Component Leader and BC Experts	Continued.
	12.00 – 01.00		Break / Preparations / Report writing	Break / Preparations / Report writing
Thursday, afternoon	01.00 – 02.30	DoS	Meeting with BC Component Leader and BC Experts	Continued.
			Ad-hoc meetings	Final clarifications with BC Experts, preparation of report and presentation for BC Project Leader
Thursday, afternoon	02.30 – 03.00	DoS	Meeting with BC Component Leader	Presentation for BC Project Leader
Thursday, afternoon	03.00 – 04.00	DoS	Debriefing with BC Project Leader	Conclusions and decisions and their consequences for the next activity and the implied work programme for BC Experts

Annex 2. Persons met

DoS:

Mr Moawiah Alzghoul Director of National Accounts Directorate, and component leader

Annual national accounts

Amal Abu Afeefeh - Head of the Annual Accounts Division

Farhan Mohammad

Loay Alrawashdeh

Mahmoud Abudalou

Input-output division

Murad Bani-Hamad

Murad Omari

Aysha Hashim Abu Shaira

Quarterly accounts division

Walid Battah - Head of the Quarterly Accounts Division

Jaber Alfazza

Annex 3. IT tools serving National Accounts in Istat (presentation screenshots)



Input data

- National Accounts Department receives and processes a large amount of data from different sources
 - from Istat all the census and almost all the surveys
 - from Government Institutions
 - and many others source
- One of the most innovation in estimates methodology is due to the use of the new data base for business structural statistics (Frame SBS)
 - **Frame SBS**: integrated system for producing detailed estimates on the economic results of the companies, based on the use of primary data from administrative sources and tax, integrated with survey data of small and medium enterprises (up to 99 workers).
- Many of internal data source are stored on RDBS (Oracle) or DataSet SAS; sometimes Excel
- External informations have many different format:
 - Excel
 - Access
 - Flat file
 - xml

The intermediate results

- For Annual National Accounts the intermediate and final results are organized in matrix format and store on server in a system of directory designed in function of domains
- Everyone of national account employees can read, but only the domain's owners can write

Software Systems currently in use

The software systems actually used for the estimations are:

- Speakeasy Linux
- SAS Windows
- Tramo-seats Linux
- Demetra+ Windows
- Excel Windows
- VBA Windows
- R Linux/Windows
- Kettle Windows

The data production is performed by means of these servers:

- BOSNIA It's a Windows Server where SAS is installed. This is mainly adopted for the elaboration of remarkable loads of data (survey, administrative, registers data)
- ALBANIA It is a Linux Server (redhat) where Speakeasy/Modeleasy is installed .

General rule

■ As a general rule:

- SAS is used primarily to process significant amounts of data (archives of survey, administrative records) as input to the estimation process
- Once traced the information to the level of disaggregation necessary to estimate the aggregate own accounting, the estimation processes keep going on the Speakeasy Environment.
- Excel has been basically adopted for the stage of control/validation, even though in some cases (i.e. in Public Finance) for the estimation process as well.
- Demetra + for the estimation of the model of working day adjustment and seasonal adjustment of indicators;
- Tramo-Seats for working day adjustment, seasonal adjustment and quarterly forecast;
- Speakeasy for quarterly disaggregation of annual data by making use of the DISAGGR function implemented «ad hoc» by the Bank of Italy.
- Kettle for the Extraction, Transformation and Load (ETL) and some other verification applications;
- R for some minor estimation processes

Other software

- **DEMETRA+**
 - Project managed by Eurostat
 - Produced by the Belgium National Bank's Department of Statistics
 - EUPL License (European Union Public License)
 - Free software license
- **TRAMO-SEATS**
 - Produced by the Spanish Central Bank
 - Recommended for the seasonal adjustment by the European Statistical System and by the ECB (European Central Bank)
 - Free software license
- **R**
 - Statistical Analysis Software
 - Free software license
- **Kettle (Pentaho Data Integration)**
 - ETL & Data Integration Software
 - Free software license

Customized application

- **DCCNWeb**
 - Intranet Web application implemented with:
 - ❖ Apache web server
 - ❖ Tomcat web server (to support BIRT)
 - ❖ Php and javascript
 - ❖ BIRT for reporting (open source)
 - ❖ Highcharts
 - ❖ RDBM Oracle
 - ❖ SAS (for ETL and some calculation)
 - Is used for Annual National Accounts, showing several reports and graphics:
 - ❖ to monitoring and evaluating the results of the elaboration before and after balancing procedure
 - ❖ to compare the different versions inside the same edition
 - ❖ to compare the difference between present and previous editions (every march and october)