

TWINNING CONTRACT

AM/14/ENP/ST/15

Strengthening of the National Statistical System of Armenia – Phase II



MISSION REPORT

on

Innovation Statistics

Activity 5.4: Testing pilot survey results

Mission carried out by

Ms. Mervi Niemi, Statistics Finland
Mr. Gediminas Samuolis, Statistics Lithuania

3-6 October 2016

Final version



National Statistical Service
Republic of Armenia



STATISTICS
LITHUANIA



Expert contact information

Mervi Niemi
Statistics Finland
Työpajankatu 13
FIN-00022 Statistics Finland
Finland
Tel: +358 29 551 1000
Email: Mervi.Niemi@stat.fi

Gediminas Samuolis
Statistics Lithuania
Gedimino av. 29
LT-01500 Vilnius
Lithuania
Tel. +370 5 2364 621
Gediminas.Samuolis@stat.gov.lt

Table of contents

1. General comments.....	4
2. Assessment and results.....	4
3. Conclusions and recommendations	6
Annex 1. Terms of Reference	9
Annex 2: Programme for the mission	11
Annex 3. Persons met.....	12
Annex 4. Example of first preliminary tables from the pilot data	13

List of Abbreviations

EU	European Union
EACU	Eurasian Customs Union
NSSRA	National Statistical Service of the Republic of Armenia
BC	Beneficiary Country
MS	Member State
ToR	Terms of Reference
STI	Science, Technology and Innovation

1. General comments

This mission report was prepared within the Twinning Project “Strengthening of the National Statistical System of Armenia – Phase II”. This was the fourth activity in component 5 and the actions planned for this activity were carried out as scheduled.

The purposes of the mission were:

- Analysis of main results regarding data collection process, feedback from reporting units, recalling of reporting units, the most frequent mistakes, etc.
- Treatment of non-response
- Review of quality of first results from the pilot survey
- Defining set of formal and logical controls
- Updating questionnaire
- To involve relevant stakeholders in the discussions

The planned activities and the expected output were all achieved.

The MS experts would like to express their sincere thanks to all officials and individuals met for the kind support and valuable information which they received during the stay in Armenia and which highly facilitated their work. The views and observations stated in this report are those of the MS experts and do not necessarily correspond to the views of EU, NSSRA, Statistics Lithuania, Statistics Finland or Statistics Denmark.

2. Assessment and results

Expected output of the activity

- Main results analysed
- Quality of results reviewed
- Formal and logical controls defined
- Questionnaire updated
- A lining up of work programme for the next activities:
 - 5.5: Preparation of regular surveys of innovation statistics (27 February – 2 March 2017)
 - 5.6: Follow-up on achievements and recommendations for the future (25-28 April 2017)

Pilot data collection – as discussed and planned in the previous mission in February 2016 and finalized after the mission – was carried out in spring and at the beginning of summer 2016. NSSRA has performed a pilot survey of innovation activity in a randomly stratified sample of 1719 enterprises. The survey was conducted via self-administered questionnaires following EU standards. Minor deviations in language and explanations are common in Armenian version of questionnaire in order to adjust the questionnaire and the survey for national conditions. In addition to NACE two digit classes mandatory in EU countries the survey was also covering some NACE classes and industries important for Armenia.

The survey was based on paper questionnaires, which were also distributed to and again further by regional offices (data collection was carried out by the central office in Yerevan and ten regional offices). In the regions outside Yerevan, the tool for collecting data was to mail the paper questionnaires, while in Yerevan it was also used emails based on the contact information from Business Register to the extent emails were available. In cases they were

missing the traditional mail was used. The fact that often the respondent was an accountant, who is not necessarily very familiar with an innovation activity in an enterprise, made the data collection very challenging. For the quality of the data it is important to find a most correct contact person, hopefully also responsible for and familiar with development activities.

The method for reminders (phone calls) during the pilot data collection was discussed and it was again underlined how important it is to have most correct contact information. This really has an effect on data quality.

The survey was collecting examples of information on innovations introduced/implemented. Personnel of NSSRA studied carefully the descriptions for innovations and contacted responding units when it was needed for more discussion on the features of activity and innovations under consideration, and perhaps re-evaluation of the original answer. In some cases statistical office's interpretation deviated from that of respondents and statistical office corrected the data received (sometimes the solution was to change original 'yes to introduction/implementation of innovation' to 'no' answer). Open questions helped a lot with clarifying whether the activity was innovation activity or not.

The most difficult issues during the pilot data collection were indeed defining innovations and innovation activity, but also defining innovation expenditure for which it was often possible to give only a proxy instead of exact figures. These are actually most challenging issues and most typical difficulties in innovation surveys in general

Pilot study results can be considered as very good. Response rate was 86.6% and by EU recommendations there is no need for non-response survey (if an un-weighted percentage of all relevant enterprises in the sampling frame, exceed 30%, then a simple random sample of at least 10% of the non-respondents should be selected). Number of enterprises reporting introduction/implementation of innovations is like follows in the unweighted data:

- number of enterprises with goods innovations 51
- number of enterprises with service innovations 21
- number of enterprises with process innovations 46
- number of enterprises with organizational innovations 59
- number of enterprises with marketing innovations 81
- number of enterprises with no innovation activity 1 335

Personnel of NSSRA responsible for the pilot innovation survey feels that before starting the regular production there should be available "national handbook" for compiling innovation statistics. Respondents for example need for more instructions what is meant by innovations and innovation activity.

Item non-response may be very common in innovation survey. The rules given for dealing with it were all based on Eurostat recommendations on editing the innovation data. One very basic issue when controlling the inconsistencies in a data is to take care of filtered data.

As regards the quality issues most topical is the quality of unweighted data, cleaning of the data. It is best to proceed step by step and quality issues can be discussed more profoundly and with better coverage later on during the project. During the mission MS Experts developed basic rules for coding, inconsistency error and logical control.

The received data were typed directly into an Excel database, which also were used for the data processing and tabulation. Before the mission, the MS Experts received anonymised database and main tabulation table for analysis. During the mission the results on database were analysed question after question. MS Experts propose to use the same codes of variables like in EU questionnaire. It will be easy to understand each other and easy present EU recommendations for weighing and tabulation.

The stakeholder meeting took place on Tuesday. The meeting was effective working meeting with representatives from the State Committee of Sciences under the Ministry of Education and Sciences and the Ministry of Economic Development and Investments. The aim was to discuss about updating the questionnaire, user needs and possibilities to turn the innovation survey into a regular production. Critical issue will be the motivation of respondents and the format of the questionnaire (state statistical reporting form or (sample) survey). In many cases legal status of surveys may affect response rates. Also electronic and online questionnaires and comparable issues more largely, very discussed. As regards several user needs it was emphasized that it is up to NSSRA's decisions later on whether to incorporate user needs outside the statistical data in to the innovation survey (or another possible data collection for statistical purposes). The constructive discussion at the stakeholder meeting indicated good and fruitful co-operation between representatives from different organizations, which is a precondition and a good starting point for effective production of information needed.

Taking into account the results of the pilot survey, comments of respondents and stakeholders, MS Experts can indicate a number of improvements to the regular questionnaire:

- eliminate indicators on turnover and total number of employees - they can be taken from administrative sources, for example from the business structure survey and the business registry
- if stakeholders can provide lists of enterprises that received support for innovation from the state institutions, we can eliminate question related to public financial support for innovation activities
- depend of financial resources in the regular survey can be included only main questions from EU questionnaire (related to EU regulations)
- in the regular survey can be added questions for national purpose (for compiling responsibilities for custom union and other organisations)

There are some expectations in Armenia to cover also the public sector by innovation survey. The focus of existing project is however on business enterprise sector – according to international standards and guidelines. At the moment there exist no international guidelines for compiling statistics on public sector innovation activity and public sector innovation would be the issue of other projects.

3. Conclusions and recommendations

After finalizing data processing, results should be weighted by number of enterprises (raised to frame population) to correct for imbalances in the sample. The strata's from the sampling may be used also for the weighting with possible combinations of strata's with thin coverage.

Quantitative variables (expenditures) should be weighted by total turnover (provided from business register or structural business statistics division). This will happen later on in

October. The proposal was to use EU's methodological recommendation and stay in line with the practices of NSSRA.

Before next mission MS Expert propose to present main survey results to stakeholders. By expert's opinion, NSSRA can provide selected output tables as examples to the ministries (tables based on EU model questionnaire codes). Further instructions for creating some basic tabulations will be provided to NSSRA in a separate documentation, but one example on these can be found from Annex of this document (Annex 4).

Innovation Survey results can also help to fill the main indicator of R&D statistics (R&D expenditure).

Regarding NSSRA's wish to have "the manual" or "the handbook" for the data collection in the future, and to have a comprehensive view on the whole survey process (which steps to cover), it was decided that project should provide a compact summary for innovation survey and for describing the survey procedure – *Methodological notes for Innovation Statistics*. The most important is a help for respondent for to define innovations and innovation activity. The rough draft content of the manual would be like follows:

0. Description of the survey
 1. Main concepts and definitions
 2. Planning the survey
 3. Data collection
 4. Data editing
 5. Imputations
 6. Data validation
 7. Weighting
 8. Tabulations and analysis
 9. Metadata & quality description
 10. Dissemination
 11. Filing and documentation

Material could help during the data collection and some of the text could be combined with more specific instructions for the questionnaire. For technical parts the manual would work like a checklist for the survey personnel. Manual should be able to pick up the most relevant elements of the survey and survey process – especially those specific for innovation survey, and it needs to be in line with international recommendations.

MS experts suppose that part of these manual questions should be filled mainly by NSSRA according national practice (for example weighting, dissemination and etc.).

One issue emphasized by MS Experts is documentation. Both the experience from the pilot but also the regular production should be carefully documented.

Homework for NSSRA until next mission:

- Finalizing and weighting the pilot data, and preparing some first basic tabulations based on MS Experts instructions
 - Deadline: End of 2016
- NSSRA should provide selected output tables as examples to the ministries (based on recommendations from MS Experts)
 - Deadline: End of 2016
- Provide comments and suggestions for the first draft version of national manual i.e. the document: "Methodological notes for Innovation Statistics"
 - Deadline: End of 2016
- Draft version of the final questionnaire made by NSSRA – approved by external stakeholders (without instructions for respondents).
 - Deadline: End of January 2017
- Keep the good internal cooperation with Business Register (cooperation at different steps of compiling statistics)
- For data quality consider making reporting of innovation data mandatory for the enterprises

Annex 1. Terms of Reference

<p style="text-align: center;">Terms of Reference</p> <p style="text-align: center;">EU Twinning Project AM/14/ENP/ST/15</p> <p style="text-align: center;">3-6 October 2016</p>

Component 5: Innovation Statistics

Activity 5.4: Testing pilot survey results

0. Mandatory results and benchmarks for the component

Mandatory results:

- Innovation statistics introduced (July 2017)

Benchmarks:

- Questionnaire for gathering innovation statistics is drafted (February 2016)
- Pilot survey conducted (January 2017)
- Test results analyzed (January 2017)
- Methodology on innovation statistics introduced (April 2017)
- Plan for regular production and publication developed (April 2017)
- Staff of NSSRA trained on issues related to innovation statistics (July 2017)

1. Purpose of the activity

- Analysis of main results regarding data collection process, feedback from reporting units, the most frequent mistakes, etc.;
- Treatment of non-response;
- Review of quality of first results from the pilot survey;
- Defining set of formal and logical controls;
- Updating questionnaire;
- To involve relevant stakeholders in the discussions

2. Expected output of the activity

- Main results analysed;
- Quality of results reviewed;
- Formal and logical controls defined;
- Questionnaire updated;
- A lining up of work programme for the next activities:
 - 5.5: Preparation of regular surveys of innovation statistics (March 2017)
 - 5.6: Follow-up on achievements and recommendations for the future (June 2017)

3. Participants

NSSRA

Component leaders

- Mr. Gagik Gevorgyan
- Ms. Nelly Baghdasaryan

Other staff

- Ms. Anahit Nazaryan
- Ms. Anna Hakobyan
- Ms. Alina Grigoryan

MS experts

Ms. Mervi Niemi, Expert, Statistics Finland

Mr. Gediminas Samuolis, Expert, Statistics Lithuania

Other stakeholders taking part in the activity

Representatives from:

- RA Ministry of Economic Development and Investments
- RA Ministry of Economic Development and Investments, Intellectual Property Agency of RA
- RA Ministry of Education and Science, State Committee of Science
- RA National Academy of Sciences

will also be invited.

Annex 2: Programme for the mission

Time	Place	Event	Purpose / detail
Monday, morning (3/10)	NSSRA	Meeting with RTA	To discuss the programme of the week
	NSSRA <i>In Library</i>	Meeting with BC Component Leader and BC Experts	Assessment of situation and presentation by BC of the work conducted since last mission Presentation by BC of the expected outcome of current mission
Monday, afternoon (3/10)	NSSRA	Meeting with BC Component Leader and BC Experts	Analysis of main results regarding data collection process, feedback from reporting units, recalling of reporting units, the most frequent mistakes, etc
Tuesday, morning (4/10)	NSSRA	Meeting with BC Component Leader and BC Experts	Discussions on treatment of non-response. Review of quality of first results from the pilot survey
Tuesday, afternoon (4/10)	NSSRA	Meeting with stakeholders	Meeting with stakeholders
Wednesday, morning (5/10)		Meeting with BC Component Leader and BC Experts	Defining a set of formal and logical controls. Planning how to update the questionnaire.
Wednesday, afternoon (5/10)		Meeting with BC Component Leader	Presentation of MS Experts' findings and agreement on the reached conclusions
		Ad-hoc meetings	Final clarifications with BC Experts, preparation of report and presentation for BC Project Leader
Thursday, morning (6/10)	NSSRA	Debriefing with BC Project Leader	Conclusions recommendations for the next activity and the implied work programme for BC Experts

Annex 3. Persons met

NSSRA:

- Nelly Baghdasaryan, Head of Social Sphere and Nature Protection Division
- Alina Grigoryan, Social Sphere and Nature Protection Division
- Anahit Nazaryan, Social Sphere and Nature Protection Division
- Hasmik Simonyan, Social Sphere and Nature Protection Division

External stakeholders:

- Aida Khachatryan, State Committee of Sciences, RA Ministry of Education and Sciences
- Lyudmila Soghomonyan, RA Ministry of Economic Development and Investments

RTA Team:

- Peter Bohnstedt Anan Hansen, Resident Twinning Adviser
- Liana Atoyan, RTA Assistant
- Anush Poghosyan, RTA Language Assistant

Annex 4. Example of first preliminary tables from the pilot data

MS Experts provide some example tabulations for NSSRA personnel for the production of first tabulations from the pilot data. Instructions for tables will be provided in separate documentation. Attached here however one example:

Prevalence of innovation activity by size category of personnel/industry 2013–2015, share of enterprises

	Product innovations (goods and services) %	Process innovations %	Innovation activity relating to product and process innovations %	Organisational innovations %	Marketing innovations %	Innovation activity, broadly defined %
Classified for example by size class or industry	The share of the enterprises with the introduction of product innovations on to the market during the survey period =(INPDT/ALL ENTERPRISES) *100	The share of the enterprises with the implementation of process innovations during the survey period =(INPCS/ALL ENTERPRISES) *100	The share of the enterprises with product or process innovations or projects for product or process innovations during the survey period =(INNOACT/ALL ENTERPRISES) *100	The share of the enterprises with the implementation of organisational innovations during the survey period =(INORG/ALL ENTERPRISES) *100	The share of the enterprises with the implementation of marketing innovations during the survey period =(INMKT/ALL ENTERPRISES) *100	The share of the enterprises with any innovations or projects for product or process innovations during the survey period =(INNO/ALL ENTERPRISES) *100

INPDT= (INPDGD=1 or INPDSV=1) (Enterprises with product innovations)

INPCS= (INSPD=1 or INPSLG=1 or INPSSU=1) (Enterprises with process innovations)

INNOACT = (INPDGD=1 or INPDSV=1 or INSPD=1 or INPSLG=1 or INPSSU=1 or INABA=1 or INONG=1) (Enterprises with innovation activity relating to products and processes)

INORG = (ORGBUP=1 or ORGWKP=1 or ORGEXR=1) (Enterprises with organisational innovations)

INMKT = (MKTDGP=1 or MKTPDP=1 or MKTPDL=1 or MKTPRI=1) (Enterprises with marketing innovations)

INNO = (INPDGD=1 or INPDSV=1 or INSPD=1 or INPSLG=1 or INPSSU=1 or INABA=1 or INONG=1 or ORGBUP=1 or ORGWKP=1 or ORGEXR=1 or MKTDGP=1 or MKTPDP=1 or MKTPDL=1 or MKTPRI=1) (Enterprises with innovation activity)