Statistical product– Innovation Statistics

Processes	Sub-processes	Sub-processes description
1.Specify needs		
	1.1 Identify needs	In August 2015 two-year EU Twinning program in statistics was launched. The beneficiary of the program was the Statistical Committee of the Republic of Armenia (Armstat) and the implementing partner was Statistics Denmark.
		The objective of the program was to support the modernization of official statistics of Armenia, introducing new statistical methodologies aligned with EU standards and strengthening dissemination of official statistics within public. The program consisted of six components, the fifth of which was Innovation statistics.
		The purpose of fifth component was:
		➤ Assessment of current situation, studying of production methods applied in the Armstat ➤ Presentation of international and European standards, including definition of innovation ➤ Overview of Science, Technologies and Innovation statistics currently produced by the Armstat ➤ Identifying of user needs ➤ Development of plan for how to develop innovation statistics.
		The expected outcomes were: ➤ Questionnaire for collecting innovation statistics ➤ Conducted pilot survey and analyzed pilot results ➤ Methodology on innovation statistics ➤ Developed plan for regular production and publication of innovation statistics.

	1.2 Consult and confirm needs	The Armstat conducted "Pilot Survey of Innovation Activity of Legal Entities and Individual Entrepreneurs" within the framework of fifth component. The survey methodology and development of tools were implemented with the practical support of Ms. Mervi Niemi, Expert from Statistics Finland and Mr. Gediminas Samuolis, Expert from Statistics Lithuania. In order to have a general overview of the entire survey process, by the proposal of the Armstat, experts from Finland and Lithuania developed the current "Methodological Notes for Innovation Statistics", which is a brief description of innovation survey and its procedure for Armstat experts, and clear definition of innovations and inovation activity for respondents.
	1.3 Establish output objectives	Innovation activities include the acquisition of machinery, equipment, buildings, software, and licenses; engineering and development work, feasibility studies, design, training, R&D and marketing when they are specifically undertaken to develop and/or implement a product or process innovation. This includes also all types of R&D consisting of research and development activities to create new knowledge or solve scientific or technical problems. The main objective of the innovation survey is to collect data and publish information about innovation activity and innovative enterprises in Republic Armenia. Statistical information on innovation activities is also essential to advice national policy making, for example how to target innovation funding and other supporting measures.
	1.4 Identify concepts	Innovation According to Oslo Manual, an innovation is the implementation (introduction)of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method. - minimum requirement for an innovation is that

		product, process, marketing method or organizational method is new (or significantly improved) to the enterprise. This includes 8 products, processes and methods that enterprises are first to develop, but also those that have been adopted from other enterprises or organizations, - a common feature of an innovation is that it must have been implemented. For new or improved product implementation means introducing it on to the market. For processes, and marketing or organizational methods implementation means bringing them into actual use in enterprise's operations. Product innovation (good or service) A product innovation is the market introduction of a new or significantly improved good or service with respect to its capabilities, user friendliness, components or sub-systems. • product innovations (new or improved) must be new to your enterprise, but they do not need to be new to your market, • product innovations could have been originally developed by your enterprise or by other enterprises or organizations. A good is usually a tangible object such as a smartphone, furniture, or packaged software, but downloadable software, music and film are also goods. A service is usually intangible, such as retailing, insurance, educational courses, air travel, consulting, etc. Process innovation A process innovation is the implementation of a new or significantly improved production process, distribution method, or supporting activity.

		• process innovations must be new to your enterprise, but they do not need to be new to your market,
		• the innovation could have been originally developed by your enterprise or by other enterprises or organizations,
		• exclude purely organizational innovations.
		Ongoing or abandoned innovation activities for product or process innovations
		Innovation activities include the acquisition of machinery, equipment, buildings, software, and licenses; engineering and development work, feasibility studies, design, training, R&D and marketing when they are specifically undertaken to develop and/or implement a product or process innovation. This includes also all types of R&D consisting of research and development activities to create new knowledge or solve scientific or technical problems.
		Organizational Innovation
		An organizational innovation is a new organizational method in your enterprise's business practices (including knowledge management), workplace organization or external relations that has not been previously used by your enterprise.
		• it must be the result of strategic decisions taken by management,
		• exclude mergers or acquisitions, even if for the first time. Marketing innovation
		A marketing innovation is the implementation of a new marketing concept or strategy that differs significantly from your enterprise's existing marketing methods and which has not been used before.
		• it requires significant changes in product design or

		packaging, product placement, product promotion or pricing,
		• exclude seasonal, regular and other routine changes in marketing methods. EU survey, CIS, has also defined some specific definitions for survey purposes, like: Innovations with environmental benefits An innovation with environmental benefits is a new or significantly improved product (good or service), process, organizational method or marketing method that creates environmental benefits compared to alternatives. • the environmental benefits can be the primary objective of the innovation or a by-product of other objectives, • the environmental benefits of an innovation can occur during the production of a good or service, or during its consumption or use by the end user of a product. The end user can be an individual, another enterprise, the Government, etc.
	1.5 Check data availability	Innovation statistics survey was carried out throughout the whole territory of the Republic of Armenia, in all communities. Survey results are representative at the country, village/town/marz levels.
	1.6 Prepare business case	Before the approval of the questionnaire by the Resolution of RA State Council on Statistics, the working discussions on included indicators and the instruction of filling in the questionnaires with Science Committee of Ministry of Education and Science of RA, relevant employees of Ministry of Economic Development and investments of RA, the representatives of Armstat marz departments and the statisticians collecting the statistical information are held, and the opinion of international

			experts is taken into account where possible.
2 Design			
		2.1 Design outputs	The data was collected within the framework EU Twinning program through the questionnaire on "Pilot Survey of Innovation Activity of Legal Entities and Individual Entrepreneurs" conducted by the Armstat.
		2.2 Design variable descriptions	-
		2.3 Design collection	Statistical data is collected through the questionnaire approved by the individual order of RA State Council on Statistics. Data collection is carried out through the sampling and comprehensive methods.
		2.4 Design frame and sample	By the questionnaire for "Pilot Survey of Innovation Activity of Legal Entities and Individual Entrepreneurs" were interviewed those companies of private sector, which had 10+ employees. The target population of the survey was the total population of active enterprises of A-N sectors of main types of economic activities (NACE Rev.2) in Armenian market. The survey excludes activities O to U consisting of public administration, education, health and social work, arts, entertainment and recreation, other service activities (professional organisations and personal services), households and extraterritorial bodies. The sampling was implemented from the business enterprise register of the Armstat. In population frame from the Business Register, statistical unit is an enterprise. According to EU Commission Regulation No 995/2012 implementing production and development of Community statistics on science and technology, the sampling consists of core (mandatory) and additional coverages. Large and medium enterprises were totally included, so the sampling comprised 100%, and the sampling for small enterprises – 30%, after which the data were weighted, data dissemination was implemented. There is a combination of sample survey and census of the enterprises included in the frame

		population.

	2.5 Design processing and analysis	During the Innovation statistics Survey, data collection was carried out with the following methods:
		
		- collection of important information regarding the Innovations,
		- to produce statistics comparable to European statistics AND necessary data for international questionnaires, e.g. UNESCO, EU and EACU, etc.
		
		Defining the content of the survey:
		- check international framework (which kind of information is collected internationally -> comparable information, benchmarking):
		    o EU context and CIS,
		    o other countries experience in innovation surveys,
		- map national user needs,
		- evaluate all the possible aspectsrelating to innovation activity that may be critical and interesting to the users of data and which could be useful to be included in to the survey (in addition to core questions, e.g. innovation capabilities, effects of innovation activity, effects of legislation on innovation activities and innovations, environmental challenges and innovations, etc.),
		- changing and developing phenomenon needs updating the statistics too, e.g. in EU context there exist changing modules (rotation, ad hoc modules etc.),
		- do evaluate when there is a need for new questions on new topics?,
		is it possible to use administrative sources to avoid duplicate data collection (think about administrative response burden)?.

	2.6 Design production systems and workflow	The preparatory work is carried out for all processes from the collection of information and until its publication, particularly, related to the appropriate notification of respondents, the training of the staff through professional

		courses and etc.
3.Build		
	3.1 Build collection instrument	Questionnaires needed for the collection of information and the instruction for filling in it are available in paper and electronic form.
	3.2 Build or enhance process components	The methodological guidelines and instructions necessary for information calculation and verification of needed information are available. Input has necessary tools for arithmetic and logical checks of input data.
	3.3 Build or enhance dissemination components	The dissemination of information is possible in electronic form of publication of information on annual basis.
	3.4 Configure workflows	The derivation of statistical product is carried out by the following successive stages: 1. collection of information, 2. checking questionnaires, coding and information input through the pre designed input software 3. dissemination of information in electronic form.
	3.5 Test production system	Due to indicators changes in the statistical reporting form the input software is regularly undergoing to relevant changes. The testing of software is also carried out in case of need.
	3.6 Test statistical business process	In parallel with the inclusion of the indicator in the questionnaire, the field examination of the latter is implemented to test the understanding of it by respondents.
	3.7 Finalize production system	The composition of methodological clarifications on the completion of indicators available in questionnaire, as well as the provision to the statistical data providers (respondents) is carried out, at the same time, maintaining verbal and e-mail contacts with the experts.
4. Collection		
	4.1 Create frame and select sample	The information is collected in sampling and comprehensive methods.

	4.2 Set up collection	In order to organize statistical information collection during the Innovation statistics from units subject to observation, the order of publication of the questionnaires, diaries and the order of filling in them is formed, printed and distributed. At the same time, the questionnaire and diary form are also available on the Armstat website. The introduction of network methods necessary for the electronic data collection is possible during the next Innovation Statistics.

	4.3 Run collection	Statistical data collection is carried out:
		
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		   - to produce statistics comparable to European statistics AND necessary data for international questionnaires, e.g. UNESCO, EU and EACU, etc.
		
		Defining the content of the survey:
		   - check international framework (which kind of information is collected internationally -> comparable information, benchmarking):
		      o EU context and CIS,
		      o other countries experience in innovation surveys,
		   - map national user needs,
		   - evaluate all the possible aspects relating to innovation activity that may be critical and interesting to the users of data and which could be useful to be included in to the survey (in addition to core questions, e.g. innovation capabilities, effects of innovation activity, effects of legislation on innovation activities and innovations, environmental challenges and innovations, etc.),
		   - changing and developing phenomenon needs updating the statistics too, e.g. in EU context there exist changing modules (rotation, ad hoc modules etc.),
		   - do evaluate when there is a need for new questions on new topics?,
		is it possible to use administrative sources to avoid duplicate data collection (think about administrative

		response burden)?
	4.4 Finalize collection	The collected information, after being arithmetically and logically crosses checked, is input in the electronic environment. The information input is carried out automated, as well as by direct input of information in electronic environment.
5.Process		
	5.1. Integrate data	The unification of relevant data received from the Armstat in one common database is implemented, in a result of which the duplications would be excluded.
	5.2 Classify and code	The coding work is carried out for the marz and territorial units in accordance with a predetermined order. The target population of the survey was the total population of active enterprises of A-N sectors of main types of economic activities (NACE Rev.2) in Armenian market.
	5.3 Review and approval	-
	5.4 Edit and impute	Data on Innovation Statistics during the elaboration process can be edited and updated (Imputation).
	5.5 Derive new variables and units	Additional calculations and estimations for the calculation of other indicators are not available.
	5.6 Calculate weight	As the information provided ensures the statistical integrity of the sphere thus there is no need for additional weights calculation.
	5.7 Calculate aggregates	-
	5.8 Finalize data files	The adjustment of statistical data by the result of Innovation Statistics and the structure of published indicators based on the result of Innovation Statistics (publications formats, output tables, and more) works are carried out. The final data is published.
6.Analysis		
	6.1 Prepare draft outputs	-
	6.2 Validate outputs	The methodological requirements to the received indicators are strictly followed during the whole process of indicators

		receiving according to the pre-defined classifications, methodological guidelines and the instruction on completing questionnaires.
	6.3 Explanation and interpretation of outputs	After receiving a list of summary indicators, it is carried out their logical analysis.
	6.4 Apply disclosure control	The confidentiality of statistical indicators (not containing individual (personal) data) that is subject to publication, as well as requested by the users of statistical information is strictly followed according to the Law on Official Statistics and the Resolution of the SCS No 53 " Approval of the Order on Protection of Statistical Confidentiality" dated 25 June 2001, and only summarized data are provided (see: https://www.armstat.am/file/doc/99454478.pdf).
	6.5 Finalize outputs	Before the dissemination of summary information, it is carried out publications format and work on derivation of output tables.
7.Dissemination		
	7.1 Update output system	The work on the derivation and final checking of relevant tables of statistical indicators that are subject to publication is carried out, as well as the time series update is implemented. In case of the need the changes and/ or additions are made in the concepts and methodological explanations of the relevant indicator.
	7.2 Produce dissemination products	All the production steps are implemented for the disseminating products: preparation of explanatory text, tables, charts and other materials, editing of these products and making them compliant with publishing standards. The information on the statistical indicators is published in paper form (hard copy) and electronic versions in Armenian and English through the «Methodological notes for Innovation statistics» manual and report On Pilot survey of innovation activity of legal Entities and entrepreneurs. Electronic publications are available in Armenian and English at:

		https://www.armstat.am/am/?nid=81&id=1979 https://www.armstat.am/am/?nid=82&id=1990
	7.3 Manage release of dissemination products	-
	7.4 Promote dissemination products	-
	7.5 Manage user support	In case of the official request of the users of statistical information related to the information not being published, the calculation of additional indicators is carried out at possible extend (in case of need) and submitted to them following the principle of confidentiality of primary statistical information.
8.Evaluation		
	8.1 Gather evaluation input	-
	8.2 Conduct evaluation	-
	8.3 Agree an action plan	-