**Challenges of applying the model of total quality management in the Statistical Office of Montenegro**

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*Recognizing the experience of Statistical Office of Montenegro in harmonizing national statistical systems with the standards of European statistical system, which are related to the institutional, and methodological harmonization, the hypothesis of this paper is that for the successful selection and implementation of a model of quality, of great importance is first to understand each aspect of statistical process, and after that the implementation of model that will make this statistical process more qualitative. Therefore, the aim of this paper is to analyze the link between the models of education of the employees in the Statistical Office in order to understand the statistical processes in context of EU integrations, and then explain why and how the TQM model is implemented in the Statistical Office of Montenegro and thus conclude with the key challenges of Montenegro as an enlargement country in the implementation of TQM.*

**Key words:** total quality management model, education, statistical process

1. **Introduction**

Statistical System of Montenegro suffered a conceptual transformation in the last 15 years, caused by the reform of social and economic system. It is well known that at the end of 20st century and at the beginning of 21st century there happened a revolutionary change of total social system when planned economy (collective ownership over resources for production) was replaced with market economy based on private ownership. The federation of six republics with one-party authority was reorganized in the market economy based on private ownership with multi-party system, resulting at the end in renewal of Montenegro independence in 2006.

Considering that Montenegro become an independent country one of the first changes that were implemented related to its Statistical system was development of new concept of Montenegrin statistical system[[1]](#footnote-1). An analysis preceding it indicated that the statistical system of Montenegro is mainly based on national methodologies, incoherent, without a clear responsibility for data quality, and administrative capacities not developed to perform independently all statistical process phases, having in mind that MONSTAT was responsible for longer period for data collection, while methodology development, data processing, and international cooperation were done by Federal Statistical Office. The purpose of reform was to build a new, interinstitutional networked system which is exclusively based on international methodologies for collection and processing of data for the official statistics purposes.

This process was long and demanding but today it’s resulted with the establishment of the strong and stabile statistical infrastructure and the legal framework which is in line with the European statistics Code of Practice. The MONSTAT today is recognised as the main producer and overall coordinator of statistics whose professional independence is enshrined in law. The Law on Official Statistics and Official Statistical System provides MONSTAT with a clear and broad legal mandate to collect and access the data needed for the implementation of the five-year Programme and the Annual Plan.

But, the emphasis should not be on the today results but on the path that we took to become what we are today. MONSTAT has been focused on three main priorities: creation of legal frameworks, methodological alignment and IT modernisation. All these steps have had the same final target: increase the quality of the official statistical data. MONSTAT emphasises the importance of quality for official statistics in its Development Strategy of Official Statistics 2014-2018, within goal 2: Management of quality by monitoring the application of the Code of Practice of European Statistics, where it is said: “*In the new Law on Official Statistics and Official Statistical System of Montenegro, the Code of Practice has been fully incorporated thus introducing legal obligation for all statistics producers to comply and implement all 15 principles”*. The principle 4: Commitment to quality obtained the special place within Monstat priorities. MONSTAT started the implementation of this principle in two different stages:

1. Creation of institutional framework which will support quality and education of its own staff on quality
2. Implementation of quality model within MONSTAT
3. **Creation of institutional framework which will support quality and education of its own staff on quality**

Commitment to quality is one of the principles of the European Statistics Code of Practice (ESCoP) stating that "Statistical authorities are committed to quality and systematically and regularly identify strengths and weaknesses to continuously improve process and product quality". All the National Statistical Institutes (NSIs) of the enlargement countries have declared to apply the ESCoP in their daily practice and to design and implement quality frameworks and management systems. Quality as well as quality frameworks and quality management have therefore become an important topic for the NSIs of the enlargement countries and a number of initiatives to set-up appropriate frameworks have already been undertaken.

First step in the creation of stabile and strong working environment is creation of the legal infrastructure. Considering this, during the previous decade MONSTAT first priority was creation of the strong and reliable Law on Official Statistics and Statistical System. Law on Official Statistics and Official Statistical System (firstly adopted in 2005) was amended in 2012. By this Law MONSTAT becomes the main coordinator of the statistical system of Montenegro. New Law defines that the MONSTAT shall be the main holder and disseminator of statistical data as well as responsible professional body, organiser and coordinator of official statistics system, and it shall represent the official statistics of Montenegro in the international statistical system. Additionally, Article 5 of the Law indicates that ‘official statistics shall be based on a commitment to quality, enabling producers to work and cooperate in line with international principles of statistical system quality’. MONSTAT recognise the need to introduce the ESS quality concept throughout the office. Since 2012, all principles of official statistics production that are defined by the Regulation (EC) No 223/2009 are a constituent part of the law on official statistics of Montenegro. If we look at the reform results from the EU’s point of view, we can draw a conclusion that Montenegro has achieved a significant success in term of institutional framework reform and “*the EU notes that Montenegro's statistical infrastructure is in line with the formal requirements of the acquis”*[[2]](#footnote-2)*.* Additionaly, the government of Montenegro issued a "Commitment on Confidence" in February 2018, guaranteeing MONSTAT's professional independence and demonstrating its trust in the National Statistical System of Montenegro[[3]](#footnote-3).

In its path to EU integration Montenegro started using the pre-accession EU funds (CARDS and IPA). MONSTAT has started to use these supporting projects in 2005, via national EU projects and multi-beneficiary regional IPA programmes[[4]](#footnote-4) (that were provided to the enlargement countries). The most important effects of pre-accession projects reflect in: (1) Carried out EU expert missions by which a significant part of Montenegro official statistics methodology in different statistical domains is aligned with the EU standards and the best practice, but also MONSTAT staff members were educated by principle “learning by doing”; (2) Training programmes participated by 25% of the total MONSTAT staff members that were trainees for 4 to 6 months in Eurostat or in different EU national statistical institutes; and (3) Continuous presence and active participation of MONSTAT staff members in international statistical conferences and working groups organized by Eurostat and other international statistical authorities. In addition to IPA projects, MONSTAT continuously supported further staff education for postgraduate and doctoral studies in domain of official statistics from the national budget. In line with Cooperation Agreement, MONSTAT educates statisticians for area of statistics at the University of Donja Gorica for a longer period. University of Donja Gorica introduced postgraduate studies “European Master in Official Statistics – EMOS,” accredited by a special EU body, and whose realization started at the beginning of 2017.[[5]](#footnote-5)

This kind of help and education covered all core statistics and horizontal spheres of official statistics. Related to the quality policy these projects have pushed us to enter deeper into the quality issue and learn about the quality management models implemented in the systems of official EU countries' statistics:

* Total Quality Management (TQM);
* ISO 9000 Family Norms (Quality Management System);
* The EFQM Excellence Model (European Foundation for Quality Management);
* The Common Assessment Framework (CAF);
* The ESS CoP and the QAF - The European Statistical System Quality Framework.

Additionally, these projects helped us not only become familiar with all quality management models but to become aware of their advantages and disadvantages, to receive a training programme on quality management for all staff in the office and to understand which model is most appropriate for MONSTAT.

In addition to IPA projects, four assessment missions carried out in cooperation with Eurostat since 2009 to nowadays (AGA and LPR) were of utmost importance for a successful transformation of institutional framework of Montenegro statistical system, whose purpose was to assess the alignment of institutional framework of statistical system with the European Statistics Code of Practice[[6]](#footnote-6). Missions’ recommendations and continuous cooperation with Eurostat were a basis for strategic planning of development and determining action plans, what contributed to today’s aligned regulatory framework with the EU practice[[7]](#footnote-7).

The recommendations that we received by the LPR team in 2012, have been treated like a cornerstone for our future steps. In the LPR report it was stress out: “*The peer review team believes that MONSTAT is strongly committed to quality, but quality is currently assessed on a narrow basis rather than following the Total Quality Management concept. Work to put in place a quality management system has started, but this needs to be underpinned by a comprehensive quality management plan to ensure, inter alia, that all MONSTAT staff is trained in quality management issues. The office also needs to create a unit dedicated to quality matters.”*

Taking into accounts the knowledge that we received from the IPA projects and recommendation that we received from the assessment missions MONSTAT started development and implementation of a Total Quality Management System and preparation of associated quality management plan. Furthermore, MONSTAT set up a Unit in the office dedicated to quality management and control matters in 2014 when Rulebook on Internal Organization and Job Descriptions was adopted (adopted by the Government of Montenegro on 4 September 2014).

1. **Applying the model of total quality management in the Statistical Office of Montenegro**

Statistical Office of Montenegro started the establishment of the quality principle, by creating the **legal framework,** introducing quality policy in all national legal and following all relevant international documents:

* The Law on Official Statistics and the Official Statistics System [[8]](#footnote-8):
  + Principle 4 - *Quality commitment* - which provides that producers of official statistics in Montenegro work and cooperate in accordance with the international principles of quality of the statistical system;
* Development Strategy and Official Statistics Programme 2014 -2018[[9]](#footnote-9):
  + Goal 2 – *Quality management through monitoring the implementation of the European Statistics Code of Practice*;
* Report by LPR assessment on the implementation of the European Statistics Code of Practice in Montenegro [[10]](#footnote-10):
  + Principle 4 – *Quality commitment* - To establish a quality management system with a comprehensive quality management plan so that all employees in MONSTAT will be trained regarding quality management;
* Declaration of Quality of the European Statistical System [[11]](#footnote-11);
* Article 338 of the Treaty on the Functioning of the European Union;[[12]](#footnote-12)
* Regulation (EC) no. 759/2015 on amending Regulation (EC) no. 223/2009 on European Statistics;[[13]](#footnote-13)
* European Code of Practice [[14]](#footnote-14).

After implementing the legal framework MONSTAT introduced the **organisational framework** by setting up a Unit dedicated to quality management and control matters. By adopting the new Rulebook on Internal Organization and Job Descriptions in 2014 MONSTAT created a completely new Department: *Department for quality management and methodology development*. The primary tasks of this Department are: carried out evaluation and analysis in the area of quality management through monitoring the application of the European Statistics Practice Code; provide education for expanding knowledge and skills in the process of collecting, processing and disseminating official statistics, with particular emphasis on quality management; improve the standardization of statistical processes through the development of existing ones and the adoption of new procedures and guidelines standardizing the production process of official statistics.

Having studied different models and experiences of EU Member States, during the IPA multi- beneficiary and IPA national projects, used for quality monitoring of statistical processes and statistical products, MONSTAT decided to select the most adequate **quality framework**: Total Quality Management – TQM. This model offers a high degree of flexibility, while it has already proven its functionality and efficiency. In order to establish the highest quality level, MONSTAT set up a management model in accordance with the Total Quality Management – TQM principles. The *Quality Management System* of the Statistical Office relies on the European Statistics Code of Practice and the principles of Total Quality Management (TQM), which symbolize a common framework for the quality of the European Statistical System.

For each of these general aims, specific actions have been foreseen, while plans for their implementation have been described in a strategic document. Principles and main goals of MONSTAT according to TQM are set up as follows:

1. Statistical processes and products of good quality
2. Satisfied statistical data users
3. Reduction of the response burden of respondents (including establishment of good communication with the respondents)
4. Effectiveness of statistical processes (internal productivity)
5. Vocational guidance of staff (education, motivation and satisfaction)

MONSTAT staffs have been trained in the field of quality trough IPA projects and concrete recommendations have been given by the Eurostat assessment missions. All this helped MONSTAT create a clear **strategy framework** related to the quality policy. MONSTAT introduced three main documents related to quality policy in 2017:

* Quality Management Strategy
* Implementation plan on the establishment of a quality management system;
* Guidebook for the implementation of the Quality Management Strategy.

The *Quality Management Strategy* of the Statistical Office, which was adopted in 2017, is the most significant document for determining the essential elements of the quality management system, which rely on the European Statistics Code of Practice. Within Quality Management Strategy MONSTAT recognized 5 main goals: (a) A firm commitment to users and other interested parties, (b) Quality statistical processes and products, (c) Professional orientation of employees, (d) Constant promotions of the quality of the statistical product and (e) Reducing the utilization of reporting units.

*A Guidebook to the Implementation of a Quality Strategy within the Statistical Office* provides employees practical suggestions for the implementation of the "*Quality Management Strategy*" and "*TQM Model Implementation Plan within the Statistical Office*". Considering the five Quality management goals of the Guidebook MONSTAT implemented the following actions per goals:

1. A firm commitment to users and other interested parties: MONSTAT intensify communication with data users

MONSTAT has been conducting on-line User Satisfaction Survey Since 2011. This survey has been upgraded in 2017. The survey was focus on a group of regular users of statistical results. Permanent implementation of the User Satisfaction Survey (every 2 years) will provide a better insight into their statistical data needs and thus meliorate the system of official statistics.

1. Quality statistical processes and products

Related to statistical processes and products MONSTAT started with the implementation of GSBPM model. Generic Statistical Business Model - GSBPM is a model that classifies and describes statistical processes in a coherent way. By implementing this model, processes may be compared and labeled within and between institutions (producers of official statistics), thus making better decisions concerning production processes and resource organization.

In 2015 Monstat established the *Integrated data processing system**– IST.*This isa .net application and a simple database metadata. These two evenly significant components deal with a large number of different databases that contain individual and aggregated data. The IST.net application is an interpreter. It reads the IST metabase data, which is a description of each application, and generates and performs in real time every statistical phase of a project, from data entry to dissemination, in accordance with the read data. Since the IST has been developed on the ground of the GSBPM model, and each IST module represents one phase from the GSBPM model, the future activities of the statistical system will be connected to the implementation of the GSBPM model at the level of static research through IST***.***

1. Professional orientation of employees

MONSTAT conducted Employee Satisfaction Survey in 2017. In order to motivate and satisfy employees, it is necessary to monitor the level of satisfaction of employees permanently and to conduct the Employee Satisfaction Survey every second year. The results of this survey have been analyzed and concrete improving actions have been defined.

1. Constant promotions of the quality of the statistical product

The user has the right to be informed about the quality of the statistical product. Quality reporting to users is defined by basic quality principles. For this purpose, MONSTAT has developed the first metadata model, and then expanded the model of the Quality Report to users. The establishment of a national reporting system represents the implementation of European standards to the national level. The focus of MONSTAT is on the National quality reports for users and official statistics producers, with the overview on seven principles on quality (relevance of statistical concepts; accuracy and reliability; timeliness and punctuality; accessibility and clarity; coherence and comparability; cost effectiveness and confidentiality).

1. Reducing the utilization of reporting units

The Statistical Office recognizes, as one of the most significant components of development, the foundation of new and harmonization of existing administrative sources with EU standards and methodologies. By collecting data from administrative sources, the utilisation burden of business entities and households will be reduced. Cooperation with holders of administrative sources has been achieved (18 signed agreements). In order to prescribe more detailed rules for the use of administrative data sources for official statistics purposes, the "Procedure on the Use of Administrative Data Sources for the Need of Official Statistics" was adopted.

Additionally, MONSTAT is developing a new electronic system of data collection for the surveys which are sent to reporting units – business entities of Montenegro. The use of electronic questionnaires enables reporting units quick and easy submission of the data they are requested. Electronic questionnaires are an integral part of improving the system of data collection of official statistics, using the CAWI method (data collection via the Internet). Currently, electronic questionnaires for researches in the field of statistics on Internal Trade, Tourism and Catering and Energy are being implemented.

1. **Conclusions**

The question is probable why we took so much time to create a quality system. It should be stress out that appropriate and skilled human resources are essential to ensure the production of high quality statistics and to implement more efficient production processes based on new technologies. Including globalization and modernization of society and processes as well as the rapid development of increasing challenges for official statistics, the focus must remain on the development of the knowledge and skills of statisticians with the purpose of improving the quality of official statistics. Based on the data of official statistics, the most important economic and everyday decisions are made on micro and macro level in all spheres of society. That is why the statistician is expected to have a great knowledge of the field in which he/she is working, high professionalism and a profound knowledge of the methods and skills required to produce quality statistics.

MONSTAT staff has been significantly improved knowledge in terms of Quality Management and Quality Reporting. Also, the most important document, the Quality Management Strategy, provided a framework for activities to be carried out in the future, in order to introduce Quality Management into the Statistical Office of Montenegro.

We would like to stress the key challenges whit which MONSTAT is faced:

* In next period it is important to *implement all activities from the Quality strategy* and to enable all conditions to achieve the given plan. MONSTAT will be especially working on the improvement of the Quality strategy and supporting documents considering that good Quality Strategy is a precondition to introduce Quality management in Statistical Office.
* MONSTAT will continue to be committed to increase the knowledge of its staff in terms of Quality Management and all other quality spheres. Selection of the Quality model is just one of the activities that should be done when we consider quality. The other parts of the quality system are: implementation of the GSBPM, assessment of the quality of administrative data source and introduction of quality management at the level of the statistical system of official statistics including all producers of official statistics. All this activities shell be continued and MONSTAT staff as well as other producer of official statistics need to continued its education related to those topics.

The TQM requires continuous improvement that consists of planning activities which need to be defined, implemented and finally tested. Dealing with quality improvement in MONSTAT is an ongoing challenge in which all employees will be included.

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