

# QUALITY MANAGEMENT PRINCIPLES IN GENERATING STATISTICAL DATA

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## Abstract

This paper proposes a general overview of regulatory documents and data submission forms on the example of statistical data published on the official website of the Federal State Statistics Service (Rosstat). Our analysis is realized in terms of meeting the needs of the population, the scientific community, commercial organizations and entrepreneurs in a variety of objectives and complete statistical information. The article contains methodology for assessing the quality management principles implementation in the statistical data forming.

## INTRODUCTION

The formation of official statistical information on social, economic, demographic, environmental and other social processes in the Russian Federation is carried out by the Federal State Statistics Service (Rosstat). The Rosstat's official website stated that satisfying the requirements of authorities and administration, media, public, scientific community, commercial organizations, entrepreneurs and international organizations for diverse, objective and complete statistical information is the main task of the Federal State Statistics Service.

Perhaps it would be more accurate to formulate this task in the form of a goal and the tasks should be considered as the formation of official statistical information about the social, economic, demographic, environmental and other social processes in the Russian Federation as well as in the manner and cases which are established by the legislation of the Russian Federation about the control in the field of official statistical accounting.

## A SURVEY AND ANALYSIS OF INCONSISTENCIES IN THE PROVISION OF STATISTICAL DATA

The examples of successful approaches and inconsistencies in the statistical data provision are given on the basis of data from the official website of the Federal State Statistics Service (Rosstat) [6]. The scale of Rosstat's work is associated with great difficulties in determining the research objects, methods and procedures for data collecting. This research is not an analysis of the Rosstat's activities as we only use the open data provided by it. In the individual organization case the identified problems of statistical data presentation could help in quality managing for the working with information.

The inconsistencies in the statistical data provision are given on:

- The purpose and objectives of data collection determining
- Definition of consumers
- Consumer orientation

For example, the topic in "Understandable Statistics" is "Living Standards", which looks at the health status of the population in Table "Respondents' assessment of their health status"

	Respondents' assessment of their health status					
	Very good	Good	Satisfactory	Bad	Very bad	Difficult to answer
All population	9,6	47,4	35,3	6,9	0,8	0,1
Urban population	9,9	48,5	34,1	6,6	0,8	0,1
Rural population	8,6	44,2	38,8	7,5	0,9	0,1

It could be logical to provide her the data on the state of health of the population based on the results of medical examinations, but data are given only on the number of examined persons. It is important for an organization to generate information on which could be made the management decisions. A traditional survey of respondents, for example, to determine the level of loyalty to an organization or to its products on a five-point scale is not very informative for the decision making, as in the example above.

## METHODOLOGY FOR ASSESSING THE QUALITY MANAGEMENT PRINCIPLES IMPLEMENTATION IN THE STATISTICAL DATA FORMING

The need for successful and effective process of statistical data generating is concerns the both side, i.e. such work producers and the data consumers. It is proposed to assess the successfulness and effectiveness of the (specific kind of) activities of the organization which produce the work with data (henceforward referred as "organization") annually basing on the work results in the reporting year.

In the organization's activities efficiency assessing we propose to use an integral performance indicator which could be calculated in score points using the formula (1):

$$R_{int} = 10 * R_{goal} + 20 * R_{task} + 20 * R_{conid} + 30 * R_{cfoc} + 20 * R_{fb} \quad (1)$$

$R_{goal}$  - is the goals of statistical data generation;

$R_{task}$  - tasks of statistical data generation;  $R_{conid}$  - consumers identification;

$R_{cfoc}$  - customers focusing, and  $R_{fb}$  is the feedback.

The indicator "An objective of statistical data generation" could be calculated in score points using the formula (2):

$$R_{target} = 0.25 * R_{targ \text{ confirm.by the management}} + 0.25 * R_{notification \text{ targ.to employees}} + 0.5 * R_{period.targ.upd} \quad (2)$$

The values that the parameter takes under certain conditions are indicated in the Table "Value of the variable from a formula (2)"

Option	Value of the variable from a formula (2)	
	condition	value
$R_{targ \text{ confirm.by the management}}$	there is an official document with targets approved by the management	1
	the targets are announced at the organization's general meeting	0,5
	the targets are announced at the administrative staff meeting	0,1
	the targets are not formulated	0
$R_{notification \text{ (about the targets) to employees}}$	the targets are agreed with employees	1
	the targets were discussed with employees	0.5
	the goals were not discussed with employees	0
$R_{periodical \text{ targets updating}}$	the targets are updated in accordance with the plan (of update works)	1
	the targets are updated only occasionally	0.5
	the targets are not updated	0

Similarly, the proposed methodology could be applied not only to the whole organization, but also to its departments, data blocks or employees.

The proposed method could be adapted to a specific organization with adjusting the indicators and its weighting factors, the frequency of assessment, etc. Its main advantage is the realization of customer focus in it and emphasis on the need of documentation support for the organization's work.

## CONCLUSION

Organizations are encouraged to apply food packages developed by international ISO limits such as 8000, 9000, 10000, as well as standards for working with data. For the Russian Federation, these are GOST R ISO 8000, GOST R 56214, GOST R ISO 9000, GOST R ISO 10002.

A review of various forms of data provision showed that the use of regulatory documents, which contain simple and obvious principles, makes it possible to improve the activities of organizations, for this there should be:

- formulated the purpose of data collection and the tasks necessary to achieve the goal;
- target or normative values are given;
- identified consumers, their needs and expectations;
- the completeness of the data provided, their reliability, scientific validity is ensured;
- timely provision and accounting are ensured;
- organized processes for monitoring customer satisfaction.

Many organizations estimate the necessity a high level of customer satisfaction as a top priority. But the problem is that the requirements of the consumer are not always known to the organization, or even to the consumer himself until the data is received, so the organization must have procedures for predicting unspecified consumer requirements regarding the structure of the data and the form of its presentation.

## REFERENCES

- Federal Law of November 29, 2007 N 282-FZ (as amended on June 11, 2021) "On official statistical accounting and the system of state statistics in the Russian Federation". URL: [https://www.consultant.ru/document/cons\\_doc\\_LAW\\_72844/c5051782233acca771e9adb35b47d3fb82c9ff1c/](https://www.consultant.ru/document/cons_doc_LAW_72844/c5051782233acca771e9adb35b47d3fb82c9ff1c/) (date of access 22.02.2022).
- Order of the Ministry of Economic Development of Russia dated April 22, 2021 N 216 "On approval of the procedure for developing a federal plan for statistical work" (Registered with the Ministry of Justice of Russia on July 30, 2021 N 64466). URL: [https://rosstat.gov.ru/storage/mediabank/prik2021\\_216.pdf](https://rosstat.gov.ru/storage/mediabank/prik2021_216.pdf) (date of access 02.22.2022).
- GOST R 56214-2014/ISO/TS 8000-1:2011 Data quality. Part 1. Review. URL: <https://docs.cntd.ru/document/1200114769> (22.02.2022).
- GOST R ISO 9000-2015 Quality management systems. Basic provisions and dictionary. URL: <https://docs.cntd.ru/document/1200124393> (date of access 22.02.2022).
- A. S. Pirogova, G. I. Ziatdinova, and A. R. Zakirova, "Analysis of the state information system of the Republic of Tatarstan "People's control", Management of economic systems, vol. 11, 2017. URL: <https://www.elibrary.ru/item.asp?id=32831247> (date of access 22.02.2022).
- Federal State Statistics Service. URL: <https://eng.rosstat.gov.ru> (date of access 22.02.2022).
- A. R. Zakirova, "International standards in improving the competitiveness of Russian universities", Materials of the II International Scientific and Practical Conference "Actual problems of development of vertical integration of education. Science and business: economic, legal and social issues", vol. 2, pp. 115-119, Voronezh: Voronezh Center for Scientific and Technical Information, 2014. URL: <https://elibrary.ru/item.asp?id=23485004> (date of access 22.02.2022).
- GOST R ISO 10002-2007 "Organization management. Consumer satisfaction. Guidance on Claims Management in Organizations". URL: <https://docs.cntd.ru/document/1200073894> (date of access 22.02.2022).
- GOST R ISO 10001-2009 "Organization management. Consumer satisfaction. Code of Conduct Guidelines for Organizations". URL: <https://docs.cntd.ru/document/1200175065> (date of access 22.02.2022).