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STATISTICAL INFORMATION AND THE DIGITAL ECONOMY IN THE GLOBALIZED WORLD

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Abstract

In the contemporary globalized world the importance of statistical information is on the increase. The creation of new information technologies (the computer, the Internet, the mobile phone, satellite dishes, etc.) leads to a considerable change in the life, behaviour and the value system of the human factor. There occur changes in the contemporary globalized world. They are challenges for changes in statistical information and statistical knowledge. The official statistics performs a fundamental function in the modern information society. In it the digital economy seeks to combine in an optimal way all material, financial, managerial and human resources in the contemporary information and communication technologies (ICT), computer systems and networks. Its goal consists in adding new value to the information chain and achieving high quality, efficiency and profitability of production and business as a whole. There emerge new virtual enterprises. They represent a temporary alliance of independent companies for solving one-off strategic tasks, along with attracting capital during the execution of unique projects and spreading investment risks.

Keywords: *global world, contemporary information and communication technologies (ICT), official statistics, digital economy, computer systems and networks, virtual enterprises.*
JEL Codes: *C10, F60*

Introduction to the problem

In the contemporary globalized world the importance of statistical information is on the increase. It is connected with the civil society, with the legislative, the executive and the judiciary powers, as well as the media, which are the fourth estate in every state and in the global world. The need for statistical information changes. Statistical

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information and knowledge are a means of international communication. That is precisely why the initiative *2013 - International Year of Statistics* is a world event in the contemporary globalized world. Its main priority is raising public awareness and confidence in the power and the impact of statistical information and knowledge in all areas of socio-economic life in the global world.

There emerge new virtual enterprises. They are a temporary alliance of independent companies for solving one-off strategic tasks. The virtualization of the economy furthers the raising of capital during the execution of unique projects and the spreading of investment risks.

The scientific aim of this article is an examination of the changes in the contemporary globalized world and the challenges for changes in statistical information and knowledge. The digital economy aims at adding new value in the chain of values and achieving high quality, efficiency and profitability of business as a whole.

1. Changes in the contemporary global world

In the contemporary global world a central place is occupied by information, knowledge and communications. The changes in the former can, in my view, be presented in the following manner:

First, the contemporary world is developing dynamically and through shocks as a complex and multi-layer social structure.

Second, the creation of new information technologies (the computer, Internet, the mobile phone, satellite dishes, etc.) and the improvement in the infrastructure lead to substantial changes in the life, behaviour and value system of the human factor.

Third, globalization as an underlying phenomenon, which is conquering the modern world. It has three characteristic features: **a) globalism and globalization of human activity in the area of the economy, the environment, war and peace and humanity as a whole.** Here are included the following: 1) internationalization of the economy; 2) development of a unified system of international relations; 3) metamorphoses in the functions and the administration of national states; 4) the operation of transnational non-governmental entities as ethnic diasporas, religious movements, mobster groups (Bliznakov, G., 1998, pp. 52-54); **b) symbiosis between man and nature under conditions of globalization.** It consists in the judicious use of the goods of nature, abating the pollution of the environment and its preservation for the whole of humanity; **c) creation of a global economic area**, that is, the kind of knowledge network under which every individual, at any time and at any point on the globe can obtain the information of interest to them, including statistical information.

The changes in the economy and business, caused by globalization, represent challenges to statistical information. The latter becomes one of the key resources in the 21st century. There emerge a number of challenges to statistical information. Some of

those are: 1) increase in the scale of economic activity both in quantitative and spatial dimensions; 2) rise in the volume of statistical data (big data), in their complexity and lack of structure; 3) insufficiency as regards sources of primary statistical information and the need for global communications; 4) differences in accounting, statistical and other standards; 5) use of different technologies for the mining, transmission, storage and processing of data, etc.

Fourth, science and education are some of the basic human values of the modern world. The on-going changes require adaptive people, who quickly make their way into in the latest developments and demonstrate creativity and not only diligence. The new realities and professions require that paramount importance be attached to the human factor. Labour productivity is defined as a way of thinking, faith in the human factor and education through the transformation of the knowledge gained from the Universities into innovations in the modern world.

Fifth, the multivalence of culture in the contemporary world. In it there occur profound changes. They concern the traditional human values. Globalization does away with the boundaries to cultural exchange and strengthens the role of morality and ethics in the contemporary world.

Sixth, in the new realities of the modern world, according to Peter Drucker (Drucker, P., 2003, p. 45) knowledge workers differ from the hired labourers in their qualification and education. They have high income, great independence and autonomy. This allows them to act as independent subjects that are often hard to replace.

Seventh, in the contemporary world the most difficult thing for an individual is to find his/her place in it. New technologies very quickly change the kind of knowledge that is in demand. On the labour market there are valued mostly intellectual qualities, the mental work, the skills for fast and effective development, which does not end upon receiving a diploma in the University. It is only one of the stages of lifelong learning (Radilov, D., 2015, p. 14).

2. Challenges for changes in statistical information and knowledge

At the end of the 20th century and the beginning of the 21st century statistics constitutes a broad area of activities (Kenesi, Z., 1996, pp. 3-4). The causes for the increased demand for statistical information and statistical knowledge are numerous. The first one is the hunger of business for statistical information, connected with the analysis of the demand for goods and services. The creation of geographic information systems raises to a great degree the need for statistical data for the business. The globalization of the world economy and international integration (e.g. the European Union, the Eurasian Union, etc.) create important requirements towards statistical information and statistical knowledge, both for the business circles and for the political power.

Statistical information is always the result of a particular statistical survey as a uniform cognitive process. In it the identification of populations of mass phenomena, processes and actions is presented by a theoretical and an empirical model, which are then experimented. It is the basis for applying statistical methods and ends with a statistical product, popularly known as statistical information. In the theoretical and methodological plan the statistical survey is not only a technology for creating information, but is above all also a statistical information system. It represents a unity of three kinds of open and hidden knowledge. Those are: 1) conceptual knowledge of the creation of statistical information; 2) analytical knowledge for revealing empirical regularities in the form of new knowledge; and 3) interpretive knowledge for statistical literacy, its use in the management at the macro-, meso- and microlevel.

In the contemporary global world statistical knowledge is distributed mainly as information. Not all statistical information represents knowledge. In order for statistical information to turn into knowledge it is necessary for it to get systematized in the minds of researchers and to acquire new forms of ideas, designs, models and cognitive images through the use of statistical methods and purposeful statistical activity. In this line of thoughts it is of benefit to remember the model of Russell Ackoff for the formation of knowledge through the transformation "data - information - knowledge - understanding - wisdom" (Ackoff, R., 1985). Therefore, in order for statistical knowledge to turn into innovations, it has to satisfy individual and public needs as unique values, with which there are taken new decisions (Radilov, D., 2012, p. 27).

At the present stage statistical information and knowledge are created in the official and in the academic statistics. The official statistics provides unbiased and objective statistical information to all persons, who make decisions. It is a public good. On it there is based the functioning of modern society. The issues of official statistics are discussed annually at sessions of the Statistical Commission with the Economic and Social Committee of the UN in New York and there are taken important decisions on the affirmation of global statistical standards. Academic statistics uses various analytics tools for improving the quality of statistical information. At the present stage their activity is coordinated by the International Statistical Institute.

One of the strategies of the UN is the creation of a unified standard at a global level for measuring GDP. Its last revision is the System of National Accounts 2008. It was approved on the 41st session of the Statistical Commission with the United Nations Economic and Social Council in New York, 23 - 26 Feb 2010. The System of National Accounts includes: a) macroeconomic accounts; b) balances of assets and liabilities; and c) tables of resources and their use in the national economy.

SNA 2008 will provide a continuous flow of statistical information: a) on the state of the economy; b) on assets and liabilities; c) on the national wealth and the quality of life of the population; d) on the relations of the national economies with the rest of the world and e) on international comparisons of GDP, the external debts and the quality of

life of the population. In the European Union there has been developed a European System of National and Regional Accounts 2010 (Regulation (EU) No549/2013).

The development of European statistical information is carried out on the basis of unified standard and harmonized methods. This utilized approach has not been adapted to the changing environment. It is based - when preparing European statistical information - on a model of aggregation by subject area. This model has its drawbacks, connected with overloading respondents, with the lack of flexibility in collecting data on mass phenomena, which have a great number of aspects, such as globalization and climate change. The aggregate of the processes for the production of statistics by the NSI of Bulgaria as an EU member state is denoted with the term "architecture". The improvement of the architecture of the European Statistical System (ESS) is based on the method of integrated preparation of European statistics, which is called the "data warehouse approach" for clusters of statistical information. They have common technical infrastructure, with the use - as far as possible - of standardized software. The propounded integrated model entails a change in the professional paradigm from "data-gathering subjects" to "subsequent data users". There emerge significant challenges of technical and methodological nature, even though the new architecture of the integrated model will improve the communication with users.

The vision for modernizing the architecture of the European Statistical System cannot be implemented by Eurostat alone. It requires the joint effort of all partners included in the ESS, each one of whom has its own specific role, while observing the principle of subsidiarity. For that reason Eurostat must include its partners in the ESS at an early stage of the process. At the same time the current efforts for reorganizing the processes of preparing European statistical information, which are under way, will continue. That refers to various initiatives, for instance the rationalization of IT architecture through the process of the life cycle of data (CVD), the introduction of a more interactive chain for the preparation of statistical information - on the basis of the solution "data at source", etc.

In principle, the activities of official statistics and academic statistics are separated at this stage. Probably in the future they should once again be united. That was the idea of Adolphe Quetelet at the time of the creation of the International Statistical Institute in Brussels in 1853.

3. The digital economy: new communications and assessments.

The digital economy has the following peculiarities: 1) great dynamism and intensity of communications and the exchange of documents and messages in digital or multimedia format, which creates opportunities for operative realization of business processes, both within the organization, and out of it; 2) the digital economy is information intensive and information becomes an important strategic resource; 3) the

digital economy puts in the limelight the issues of the security and safety of information; 4) the digital economy encompasses the national economies of the individual countries, but along with that it is also part of the world global economy.

In the digital economy an important position is occupied by the knowledge economy, which will develop and dominate throughout the entire 21st century. Under it the most important resource and true wealth will be people themselves with their knowledge, intellect and experience. Unlike material products, knowledge is a specific information product. It is characterized by the following features: 1) it is discrete, because we can determine clearly whether new knowledge has been created or not; 2) it is accessible, because it is a public good, which can be used by everyone; 3) it does not amortize after use since it does not decrease in volume, on the contrary - it leads to new knowledge; 4) the effective regularities and mechanisms in the knowledge economy unite the market for knowledge, the market for services and the labour market, which should not be viewed in isolation, but always in close interaction between them.

An important place in the market for knowledge belongs to innovations. They should be regarded as the application of knowledge in production and market conditions in trade, marketing, financial services, etc. Innovations encompass and permeate all business processes. They affect not only the material, but also immaterial objects. Information resources and human knowledge in the broadest sense of the word dominate in the creation of public wealth.

The role of official statistics (Radermacher, Walter J., 2017, pp. 1-5) is to provide public information infrastructure, a system of statistical products, which would bear the stamp of high scientific quality and professionalism. The other aspect refers to politics and is called "society". Variables such as gross domestic product (GDP), employment, household income, etc., reflect concepts, which are aggregated at an excessively high level. These definitions should be reconsidered and revised, so that at a later stage they can be measured correctly.

The leading principles of statistical information are the key to the empowerment of society: 1) the access to high-quality statistical information is a fundamental right and facilitates the making of appropriate decisions; 2) publicly accessible data are fundamental to open societies; 3) providing training to society to work with the data, which is not exhausted only with the knowledge of statistical information, includes their rationalization. 4) the future belongs to "smart statistics", on which the value of information is based, and also on the algorithms, which reveal the behaviour and the way of thinking of users; 5) greater influence entails also greater responsibility, which is connected with ethical principles; 6) the statistical community is unanimous on the issue of adhering to statistical ethics, which includes professional values and ethical principles.

An important place in the creation of statistical information is held by the players and their roles. Three roles in particular stand out: 1) Statistical Offices, which take the statistical responsibility and accountability; 2) Director General (President), who bears

personal responsibility for the work of the statistical institution and 3) Chief Statistician, who performs the role of a coordinator in the statistical system.

The partners are the National Statistical Systems and other institutions, which create statistical data - both domestic and international. The interested parties and organizations (stakeholders) are respondents and users of the statistical product. In the political aspect there are clearly outlined the roles of the institutions - represented by the Parliament, the government, auditing units, the courts of law, as well as society in the role of regulator.

In the age of excess of data (von Oppeln-Bronikowski, Sibylle at al., 2017, pp. 1-6), the channels and the ways in which those are presented, are of growing importance. Statistical organizations and institutions develop strategies for presenting their production so that there are revealed the strengths and the weaknesses in creating a reputation for reliable data.

The national statistical offices, which develop the "official statistics", produce statistical data of high quality, reliability and uncompromising objectivity. Their output is based on the fundamental principles of the "official statistics". The European Statistical System introduced a code of practice and a quality declaration. These are two significant facts, by which official statistics differs from the other statistical organizations. What is needed is a branding system, which would introduce the general public to the competitive advantages of official statistics, in order to raise public confidence in statistical institutions and their work, and also a communication strategy.

The communication strategy includes the following elements:

1. It is based on the mission of official statistics, presented by means of the slogan "You can trust us and our work". The platform for action relies on 5 pillars. They are: 1) improving the brand; 2) improved access to information; 3) satisfying the needs of target groups; 4) intensification of dialogue and 5) raising comprehensibility. Choosing the appropriate marketing channel is the key to putting the plan into effect.

2. Increasing transparency is one of the approaches to raising confidence in official statistics. Working out the strengths and the weaknesses of each method is a step in the right direction.

3. The dialogue with the users should be an on-going process, which would actively seek feedback from the former. The analysis of the image which official statistics communicates in the public space, by reviewing the contents of the posts in the social networks (Instagram, Twitter) is the first step in the formation of the right image.

4. Public Relations are another technique for targeted communication, which allows for guidance towards key persons, who exert certain influence over existing and potential users. The communication towards them can increase the effect of the messages which official statistics wants to send to the public.

5. In the past official statistics was dependent on the media. They distributed the statistical product. People did not visit the sites of statistical offices, nor did they try in

any other active way to access those. The contemporary trends are formed by the statistical offices, which act as media and single-handedly distribute statistical data to the social networks in the form of charts, videos and articles (for example the statistical offices of Mexico and Holland). Another approach is the joint work with the media in order to raise the efficiency of publication of statistical data for the public.

6. Content marketing is a new approach, which identifies the hot topics in the Internet space with the help of software for assessing their connection with statistical data. It creates possibilities for analyzing statistical data in the economic landscape.

7. Statistical literacy affects mainly the users of statistical information, but the final beneficiary is the official statistics. The quality of the statistical product should be assessed by the users. Investing in visualization tools and educational modules in the Internet space is a long-term investment, which can reap significant and lasting results. The training of the end users in statistical literacy contributes to the comprehensibility of the data, to the confidence in the institutions and to strengthening the position of the statistical brand.

The assessment of the digital economy (Sturgeon, Timothy J., 2017, pp. 1-6), of which official statistics measures certain major economic indicators, such as investments, trade and corporate profits, broadly speaking, rests on 5 pillars. Those are: 1) advanced production, robotization and industrial automation; 2) new data sources from mobile and general connectivity; 3) cloud-based computerization (cloud computing); 4) Big Data analytics and 5) artificial intelligence.

In measuring the digital economy there are discussed two major approaches. The first is to assess the usefulness of existing statistics and statistical categories for the measurement of the digital economy. The second approach does not exclude the first one and comprises the use of the statistical metadata generated by the digital economy (e.g. data traffic, Internet searches, number of clicks, etc.).

Conclusion

The present article, which does not claim to be exhaustive, outlines the framework of the changes in the contemporary globalized world and the challenges for changes in statistical information. At a future discussion there should be considered the users of statistical information, the channels of communication with the users of statistical information and the future needs for statistical information in the 21st century for the development of the natural sciences and the social sciences, the studies of the environment, the social conditions and public health. The inclusion of statistical information in international comparisons is also of interest in terms of good national statistical practices, programmes, budgets and employed personnel.

The digital economy includes the following features:

1) The creation of new information technologies in globalization, science and education, are values which are directly related to the digital economy.

2) The role of the official statistics is to provide public information infrastructure and system of statistical products, which would bear the stamp of high quality and professionalism.

3) The communication strategy includes 7 elements, connected with the mission of official statistics, the transparency, the dialogue with the users, the relations with the public and the media, content marketing and statistical literacy.

4) The assessment of the digital economy is connected with measuring the major economic indicators such as investments, trade, corporate profits, etc.

5) In assessing the digital economy there are used two principal approaches, the first of them assesses the usefulness by means of classical methods and statistical categories, and the second uses the statistical metadata generated by the digital economy.

The London seminar on the future of statistics, held on the 11th and 12th of November ended its work without an official resolution. On it there were not discussed thoroughly enough the issues of the integration of the official and the academic statistics. Instead, there were made informal conclusions, which, according to the organizers, were sufficient for the future of statistical sciences (Statistics and Science, 2013, p. 34).

REFERENCES

Akoff, R. (1985), Planirovanie budushtego korporatsii, Moskva.

Bliznakov, G. (1998) Oshte za informatsionnoto obshtestvo i za nyakoi negovi sotsialni aspekti - in: Ponedelnik magazine,Nos 10-11, pp. 49 - 61.

Drakar, P. F. (2000) Menidzhmant na predizvikatelstvata prez XXI vek, transl. K. Dimitrova, publ. Klasika i stil OOD, p. 196.

Kenesi, Z. (1996) Analiz na potrebnostta ot statisticheska informatsia - in: Statistika magazine, iss. 5, pp. 3 - 16.

Radilov, D. (2015) Evropeyskata statistika v informatsionnoto obshtestvo - in: Statistika magazine, iss. 2, pp. 13 - 24.

Radilov D. (2012) Inovativnost na statisticheskite znania vav virtualnoto prostranstvo - in: Statistika, informatsionni tehnologii i komunikatsii, Yubileyna nauchna konferentsia, Izdatelski kompleks - UNSS, p. 25 - 30.

Radilov, D. (2013) The Knowledge of the Science of Statistics in the modern World // Statistikata kato nauka, obrazovanie, profesia i deynost: Mezhdunar. nauch. konf.: posvetena na 2013 – Mezhdunar. god. na statistikata / Progr. Comm. Plamen Iliev et al., Org. Comm. Dimitar Radilov et al. - Varna: Univ. izd. Nauka i ikonomika, pp. 25 - 39.

Evropeyska sistema ot natsionalni i regionalni smetki v Evropeyskia sayuz - in: Reglament (EC) №549/2013 na Evropeyskia parlament i na Saveta ot 21 may 2013 godina.

Saobshtenie na Komisiyata do Evropeyskia parlament i Saveta za metoda za izgotvyane na statisticheskata informatsia na ES: vizia za sledvashtoto desetiletie (2009). Komisia na evropeyskite obshtnosti, Bryuksel, 10.08.2009 g. COM (2009) 404 okonchatelen, pp. 1 - 17.

Statistics and Science, A Report of the London Workshop on the Future of the Statistical Sciences (2013), pp. 1-37.

von Oppeln-Bronikowski, Sibylle, Susanne Hagenkort-Rieger and Maria Joao Santos, *New trends in communication - branding and content marketing*, Power from Statistics, 18-19 October, 2017, Brussels, pp. 1-6.

Sturgeon, Timothy J., *Measuring the "new" digital economy*, Power from Statistics, 18-19 October, 2017, Brussels, pp. 1-6.

Radermacher, Walter J., *The Future Role of Statistics*, Power from Statistics, 18-19 October, 2017, Brussels, pp. 1-5.