

Towards a knowledge-based society – an imperative of our time. Particularities of its edification in the Republic of Moldova.

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Abstract. *The authors are examining the essence and indispensability of a knowledge-based society, the logic and particularities of its edification. The article is focused on the analysis of the essence and specifics of building a society based on information technology and communication, on education and research, on innovation and on services directly related to knowledge. The authors' hypothesis is that the essence of the new society that emerges at the beginning of the twenty-first century is a result of the interactive and integrative influence of all new types of knowledge and innovation as well as of their multiple and, sometimes destructive, contradictory effects on the traditional forms of economic activity.*

Keywords: *post-industrial society, information society, knowledge-based society, particularities of a new society*

Introduction

Many economic researchers in the second half of the 20th century and the beginning of 21st century chose to focus on investigating the modern society and identifying the ways to accelerate its economic development. There are multiple terms and definitions related to the newly emerging society. In authors' opinion, it is not the name we give to such a society that matters, be it *post-industrial*, *information* or *knowledge-based* society. The important fact is that researchers are marking the emergence of a new society, which represents the result of a cardinal transformation of the economy in an era of globalisation and innovation, with everyday advances in software applications, robotics, gene therapy, artificial intelligence etc.

Starting with the 1950s, when total factor productivity that captures the effects of innovation reached a pick at 3.4 percent a year, essential transformations in all areas of economic activity have been noticed, especially in advanced countries. This is a clear indication of the transformation of economy and society as a whole, of its evolution towards a much more qualitatively elevated level. This new momentum – Post-Industrial Society - was emphasised and popularised by the American professor Daniel Bell (*The Coming of Post-Industrial Society*. New York: Harper Colophon Books, 1974), although the term originated in the major work of the French sociologist Alain Touraine (1969). This new quality of the economic development was expressed in the significantly larger share of services in GDP, which, nowadays, represents more than two-thirds in the advanced economies.

The two new concepts of "knowledge economy" and "information economy" have emerged practically simultaneously and were investigated by Fritz Machlup – an Austrian-born American economist (*The Production and Distribution of Knowledge*. Princeton University Press, 1962). Later, these concepts were developed by other researchers, particularly by those who focused their analysis not so much on the information advances but on the emergence of a new, technological and technocratic society. By the end of 20th century the notions of

“information society”, “informatization” had firmly entered into the vocabularies of working class professionals, politicians, economists, scientists, educators, being associated with the information and telecommunication technologies, and marking a new qualitative “jump” in the economic and societal development at the beginning of the 21st century.

The post-industrial society along with the development of the service-based economy evolved to reach a new level of informatization, with information processing becoming its distinctive feature. Storing, processing, transmitting and, generally, using the information, are the most obvious characteristics and, at the same time, challenges of our time. This essential transformation in the whole economic process, including production and consumption, lead to an increased efficiency of the economy and of the total factor productivity, although the current decade has recorded a decrease in the latter to a pathetic 0.5 percent per year (Are We Out of Big Ideas? By Greg Ip, The Wall Street Journal, 7 December 2016). It is important to mention the transformative role of the Internet, mobile telephony, digital technologies in transmitting and processing of information and big data as well as in the new qualitative development of programming systems. Modern economic development is accelerated through this dynamic process and its increased role in stimulating innovation and creativity.

In the context of this new environment, we can stress the importance of research and product development, of knowledge with the especially important role of education as a process of accumulation, transmitting and generating of knowledge. The development of modern society is based on this process and on the knowledge as a new factor of production. The awareness of the increased role of knowledge in the economic development generated the term “knowledge-based society” or “knowledge society”.

The crisis of human society, caused by the insufficient ecological and material resources, had re-oriented the scientists and practitioners towards searching for new

potential sources of development, to listening to the “human conscience” as a solution to the global problems of the newly emerging society. The Romanian Academician Mihai Drăgănescu proposed the new term of “conscience society” (“societatea conștiinței”) as a solution for the viable and efficient functioning of the modern human society in all its dimensions, including the economic one.

There are many concepts and interpretations of the modern society. We think it is important to focus our research not so much on the terminology itself (“post-industrial society”, “information society”, “knowledge society”, “conscience society” etc.) but rather on the essence of the concept in the context of the transformations, some of them dramatic, even radical, taking place in today’s society, in the frame of the persisting global economic crisis. This crisis has many characteristics, but the most important one is its systemic nature, this being part of the painful process of emerging of a new human society. Firstly, let us specify the categories used in our analysis:

Knowledge is conceived as the process of generating and accumulating new information, new ideas and the rethinking of the already existing ideas through various forms of instruction and education.

Research is viewed as the process of “producing” knowledge.

Instruction is defined as the process of transmission of the already existing knowledge.

Information is treated as the reflection and projection of reality directly by the human rationale or indirectly by using certain tools, including automatic calculation.

The information society is identified as a society based on generating, exchanging, distributing and consuming information and is recognised as the main source of economic growth and development with its basic tools: information and communication technologies.

Post-industrial society is the original definition of the new society.

Innovations are defined as the result of scientific research and investigation, including their practical application. Of course, the innovation process also covers the *sine qua non* conditions: the utilisation of new technologies and an extension of the applicative and fundamental research. Creativity is a must for the successful employment of the highly-qualified labour force with applicative skills and research abilities.

Regardless of the differences in approaches and definitions, the knowledge-based society is an objective reality with its own specific, reflecting the great impact of knowledge on human life and behaviour. We consider the investigation of this new society and its particularities to be of major importance in understanding the essence and trends of the modern economic realities.

The Knowledge-based society – an imperative of our time. Some historical reflections.

The role and the importance of building the knowledge-based society become more prominent if we compare it with the industrial society. We would like to remind that industrialisation was considered the most important factor in increasing the economic competitiveness and development in the most recent time period, up to the end of the 20th century. Historically, industrialisation was viewed as an inalienable part of the modernization of the economic, political and social processes. The rapid modernization of every country and, primarily of those with advanced and emerging economies, was oriented towards improving economic competitiveness through industrialisation – a goal that has been in the sight of politicians, economists and other working professionals. Of course, various countries experienced different ways of reaching this goal: the industrial education of the nation, the combination of protectionist policies with the trade liberalisation, the enforcement of industrialisation by the government regardless of its costs. The outcomes of these approaches had also been different: highly successful in Germany and other western nations, to the

Stalin's style rapid industrialisation of the Soviet Union in the 1930s – an experiment that cost millions of lives and which had been promoted under the slogan "*There are no fortresses Bolsheviks cannot capture*". The Stalinist economist of that time Stanislav Strumilin, paraphrasing Marx's statement "the task of philosophers was not to interpret the world but to change it", asserted that "*our task is not to study the economy but to change it*" (The Soviet Experiment. By Ronald Grigor Suny. Oxford Press, 1998, p. 234).

The negative attitude of some countries who were "left behind" industrialisation was reflected in their intentions to "catch up" by combining the effects of globalisation with the policies targeting the post-industrial development. A relevant example is the Republic of Moldova – with a type of re-industrialization characteristic to the "Third-World" countries, a re-industrialization which was inserted in post-industrialization policies in the context of globalisation.

It is an axiom that success comes to countries that have based the industrialisation on the market mechanism, on economic liberalisation and private sector initiative, employing the later in the modernization of their societies and economies. By contrast, for countries that had started their industrialisation with a significant delay, the government policies became the basic instrument in promoting this process. For these countries, John Stewart Mill's advice made in his famous book "Principles of Political Economy" (1848) is still important: countries with undeveloped industry should first improve the management and protection of property, impose moderate taxation, increase the level of education of their population, attract foreign investments. Of course, the terms of this process are now different from those of the 19th century, when rapid industrialisation was a priority. Today the priority is the development of a knowledge society, use of information and knowledge as determinant factors of the current modernization. For the less-developed countries, "catching up" and accelerating their development remain to be priorities of the government policies and of the national

conscience, although the approaches and outcomes vary immensely.

The theory of post-industrial society is one that explains the essence, particularities and policies necessary to overcome the disparity in development and how to achieve a higher level of competitiveness and development. These ideas are not new and may be found even in the medieval philosophical and religious treatises, as well as in other later studies. However, they become especially prominent in the 40-60-s of the last century, when the theories of the development of national economies were associated *volens-nolens* with the specific period of development of human society (hunting and gathering society, agriculture-based society, industrial society, service-, information-, and knowledge-based societies etc). The studies employing these ideas divided the society's economic development into pre-industrial, industrial, and post-industrial periods with their conclusions relating to the development of a new society, which has also represented the convergence of eastern and western economic systems. During the '60s the methodological foundations of the post-industrial society were elaborated, based on concrete achievements in various areas: science, education, information sector, managerial abilities in improving competitiveness. Most importantly, this period acknowledged the special importance of the human factor, scientific research and education in promoting the sustainable development, competitiveness, and national security.

By 1970 the humanity entered a new phase of development, that of a post-industrial society – a new society that emerged as a result of significant achievements in science, education, knowledge, information and services. In comparison with the traditional resources – nature and its derivatives, labour, capital, which have all reached their limits, *knowledge* has an *unlimited* character, with a volume that doubles in shorter and shorter consecutive periods of time. This represents the essential condition for the development of the traditional and the modern sectors of the economy. One of the most important achievements of the 60's and 70's is the new role of science and its results in both the

economic development and the transformation of the society.

In later periods (80-s and 90-s) the researchers were focused on more concrete aspects of post-industrial transformations, including the investigation of the impact of a new society on globalization, on the acceleration of the scientific and technological transformations, on the reduction of the share of the traditional sectors in the national output, on the development of services and information, on the increased role of the human factor, information and knowledge. According to Bell, the post-industrial society is a society whose economy had gradually evolved from the production of goods as a major sector of their economy to the production of services, research works, education with consequent improvement in the quality and standard of living. This is a society, where engineers, economists, technocrats and technology experts – a newly emerged (or re-emerged) intellectual class - become a key group of professionals for economic development and societal modernization, where innovations are increasingly dependent on theoretical knowledge and its practical application.

The case of the Republic of Moldova

It is important to mention that the service sectors that are not directly related to knowledge are not attributed to determinants of the new model of society's economic development. The non-material character of these sectors is not a sufficient precondition for their belonging to post-industrial society despite their important share in the period of transitioning from industrial to the post-industrial society. From the contemporary experience, for example, that of the Republic of Moldova, the significant share of commerce and other traditional services does not necessarily indicate the post-industrial character of its economy. It is, however, a clear sign of the diminishing role of the traditional sectors, such as agriculture and industry in the GDP. The Moldovan economy could not have been characterised as a predominantly industrial economy nor in its pre-independence period, when Moldova was one of the 15 "sovereign" Republics of the Soviet Union with Russian

Federation being "more equal" than others, neither after its independence in August 1991. Even during Moldova's highest period of development, its economy would have been classified as an agrarian-industrial, based on the "agrarian-industrial complex", as it was called at that time. Currently, its GDP structure is dominated by services and other post-industrial sectors. In this context, we find it appropriate to address the following questions:

- 1) Is Republic of Moldova's economy a post-industrial one?
- 2) If the answer to the first question is "no", then why would it not be considered a post-industrial economy?
- 3) Can R. Moldova avoid the industrial stage of development?
- 4) What could and should be included in the policies of building a post-industrial society, of improving the economic competitiveness, national security and prosperity of people?

Despite the apparently post-industrial structure of its GDP, Moldova's economy is not sufficiently competitive and is not adequately secure for an independent state that aspires toward European integration.

Addressing the first question – there is almost unanimous opinion among experts that a predominantly immaterial sector in Republic of Moldova's GDP structure is not a sufficient argument for post-industrial society appurtenance since the quality of life and utilisation of its human capital remain grossly unsatisfactory. The post-industrial society is characterised by a higher level of economic development, by the utilisation of the human capital, of knowledge and information and by the achievement of higher living standards. The post-industrial countries are much more resilient, for example to the negative effects of the global economic crises, and the Republic of Moldova is, obviously, not part of this category.

Addressing the second question, we can mention the reduced standard of living, the low quality of human potential, the insufficient level and share of the truly post-industrial sectors in R. Moldova's GDP and their insignificant impact

on the development of the traditional sectors. A bigger share of commerce and other services is also due to the excessive emigration of the most dynamic and productive part of Moldova's labour force and does not indicate a post-industrial character of the Moldovan economy.

Addressing the third question: the answer may be "yes". Moldova could avoid the industrial stage of development partially due to the lack of resources for the development of a competitive industrial sector, and partially because of the ascending dynamic development of the post-industrial sectors. Of course, it is of crucial importance to provide institutional support for the traditional sectors capable of using information, scientific achievements, instruction and education, medical assistance, as well as for the modern post-industrial sectors encouraging creativity, talent and utilisation of the locally available resources for education, science and other post-industrial factors.

Addressing the fourth question: taking into consideration the specifics of the existing conditions, there is a possibility for a "jump" in development based on the post-industrial factors. In this context, the priority of the government policy is to assure an efficient public/private management of the internal and external resources, to invest in education and knowledge and in other related post-industrial sectors along with modernising the traditional sectors. It is vitally important to promote a coherent policy of regional integration to support the process of European integration, taking into consideration the positive and negative effects of globalisation and of the still excessive dependence on one source of energy supply – the Russian Federation. In this respect, the importance of a research directed towards a deeper and more comprehensive analysis of the advantages, vulnerabilities and priorities in building a post-industrial society becomes obvious. In this process, it may be reasonable to re-visit the doctrines of economic nationalism of the 19th century, which generated ideas and successful policies in the German states regarding the enforcement of industrialisation and the acceleration of the economic growth and development.

The Republic of Moldova has a few characteristics that are important for transitioning to the post-industrial stage:

- the *human capital* is the main resource, with relatively important achievements in computer science, programming, and other knowledge-based sectors;
- the existence of other development resources, such as natural and ecological potential, which may be successfully explored and exploited due to the accumulated human capital, knowledge, applied innovations and new technologies;
- the industrial activities re-oriented from manufacturing to processing;
- the emerging of new high-end technologies that utilise little capital and labour in a more efficient way;
- regional integration, connection to globalisation, considering country's competitive advantages and prioritising its economic interests.

It should also be stressed that populist policies, based on the empty promises of a radical re-orientation of Moldova's economy from "West to East", the abandonment of the process of European integration and sacrificing all the achievements on this way, as well as ignoring the priorities of building a post-industrial society, are utterly counterproductive. The elaboration and promotion of the policies targeting the acceleration of the economic development and of the institutional and administrative reforms represent the most complex, difficult and debatable issues at the moment. However, there are no reasonable alternatives to these policies. Only through them is it possible to increase the competitiveness of Moldova's economy, the prosperity and the living standards of its people and to assure an adequate level of national security matching the current challenges, including those from separatist region of Transnistria.

The predominance of commerce, finance, transportation and others service sectors is a *status quo*. Nevertheless, these sectors could not be determinant in building the

post-industrial society. The logic of the evolution of the modern society points at the special importance of knowledge, education, information and human capital for the development and the efficient functioning of the national economy. Along with these knowledge-based sectors, the social forms of societal organisation are also important, such as family and kinship – elements of the traditional and natural economy. These social forms co-exist in contradictory dialectics with the market and public types of economy. Thus, each type of economy does not exclude the existence of any previously formed sectors and integrates them into superior forms of economic activity on a new technological basis. For example, in an industry-based economy, industrialisation contributes to the modernization of agriculture and other already existing sectors through the intensive use of knowledge and the utilisation of a highly-qualified labour force. In the post-industrial society, the traditional sectors are modernised and transformed based on knowledge and on the use of a labour force capable not only to absorb but also to generate knowledge and innovation.

In the global economy of the recent decade, however, a tendency of economic decline and degradation of living standards has been observed. It becomes obvious that the monetary policies of stimulating quantitative growth, widely used during the recent crisis, proved not to be sufficient for a sustainable economic growth and an increased competitiveness of the economy. The global economy is still in decline due to the largest and longest recent (2007-2008) financial crisis of the last eighty years. A modest reinvigoration of the global economy does not mean recovering of the global economic growth. The global economy practically stalled and failed to respond to the active and sometimes aggressive monetary policies of the US, Japan and UK. The reinvigoration of the other economies through policies of austerity has been weak and unconvincing and was accompanied by a negative impact of the increased geopolitical instability and tensions in many regions of the world, particularly in those with emerging markets. The essential factor of their

competitiveness remains the investment in institutions, capable of assuring dynamic and robust economic growth and modernization. At the same time, the main obstacles on this way remain to be: corruption, political instability, rigid fiscal regulations and limited access to finance. Although the geographical and the geopolitical conditions are important for improving the economic competitiveness of a nation, institutions and innovations remain its major factors. Countries with strong and stable institutions, effective innovation policies and an efficient regional economic integration are much more prone to economic advance. This is also important for reinforcing a nation's economic security.

From the very beginning of its independence, Republic of Moldova received a significant economic assistance from the EU, USA, Japan and other western nations as well as from the international financial institutions. This assistance was directed towards institutional development, infrastructure modernization, implementation of various projects of rehabilitation of agriculture and social infrastructure. A much more robust impact on Moldova's economy could be made through its integration into the western economic area, which could burst its economic competitiveness. Such an important national strategy could include:

- stimulation of the socio-economic activities, based on economic, techno-scientific, managerial and ecological rationales;
- increasing the level of foreign investments;
- improving the external commerce and its efficiency;
- reducing the transaction costs in economic activity;
- valorising substantial funds for reducing poverty, inequality and other gaps;
- re-launching of research and development activities;
- stabilising the prices in the internal markets and reinforcing the control over inflation;

- improving the state of the financial and banking sectors as well as the efficiency of the markets' functioning;
- improving the governance and eradicating the corruption;
- progressively adopting the European standards;
- having the reforms being monitored by the European Union.

Conclusions

The active support of instruction and education, medical assistance, informatics, science, development of human capital, economic security and an efficient regional economic integration are of foremost importance to the Republic of Moldova. However, none of these factors taken on its own can enhance the economic competitiveness, the national security and the formation of a post-industrial society. Only a satisfactory integration of these factors into an efficient and comprehensive national strategy might achieve such goals. For instance, the effect of an increased investment in education and instruction could be mitigated by a malfunctioning labour market, or by some structural deficiencies. Accordingly, the college graduates, even with excellent educational records, would not be able to find jobs in their own country and would be forced to emigrate. Similarly, the improvement of the macroeconomic environment and the optimisation of the public finances cannot succeed in the absence of an adequate transparency of the financial management and in conditions of persisting corruption. The introduction of new technologies is directly dependent on the entrepreneurs' assessment of the cost-benefit analysis of their investments. We, therefore, conclude that the performance and competitiveness of the national economy are determined by the comprehensive and efficient knowledge-based policies and strategies.

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