

KNOWLEDGE BASED SPECIALISTS THE DETERMINANT DRIVEN FORCE OF THE KNOWLEDGE BASED ECONOMY

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Abstract

Fundamental mutation of the last decade is the shaping of a new type of economy as well as a new type of society. The main objectives of our paper are to highlight the emergence of a new social class - knowledge based specialists, and to emphasize the main features, and their impact on economic performance and functionality. From a methodological point of view, the article is based on theoretical and factual analysis of economic and social evolution from last decades. The paper is structured in the following main components: short presentation of the concept of knowledge revolution, identification and analysis of structural changes in the modern economy, highlighting and evaluation of major changes occurring in the types and content of occupations in the knowledge economy, presenting the main features of the new social class and argumentation the determinant role and impact of knowledge based specialists in the knowledge economy and society.

Keywords: knowledge based specialists, knowledge economy, social class, knowledge revolution, knowledge society, occupations, structural configuration.

JEL Classification: P40, O10, O34, J24

1. Introduction

Although used with increasing frequency in recent years wording "knowledge revolution" is relatively little known and used in Romania. Some may even consider that this collocation is a simple replacement of the information and/ or computer revolution, a tautology. Although there is a close connection between the information revolution, to which specialists refers from several decades, and knowledge revolution, the latter is significantly different in terms of inclusion sphere, nature and economic, social, scientific and ecological finality (Zhou, Siu and Wang, 2010).

Knowledge revolution consists in a fundamental change from the economy based predominantly on physical resources to economy based predominantly on knowledge (Jones, 1995). With the onset of the knowledge revolution - comprehensive and profound process which generated essential changes in all components of economic activities, similar in intensity to those produced by the industrial revolution - began the transition to knowledge based economy and society, within which is outlined and manifest a new social class, the knowledge based specialists.

2. Structural changes in the economy

A new type of economy means also a different type of economic structure compared with the previous one. Performed analyses combined with the results of studies from other specialists, have lead us to the conclusion that *structurally, knowledge based economy differs from industrial economy*, mainly on two levels:

- the share of different sectors within economy and their contribution to generate added value;
- the nature and forms to execute economic processes in these sectors.

Naturally, the transition to a new type of economy - knowledge based - is reflected in *essential changes in the structure of national economies*.

Further on, we examine the structure of the knowledge based economy compared with the structure of traditional industrial economy. In order to ease the understanding of differences that took place or are in progress, in figures no. 1 and 2 we present configurations of the two types of economies.

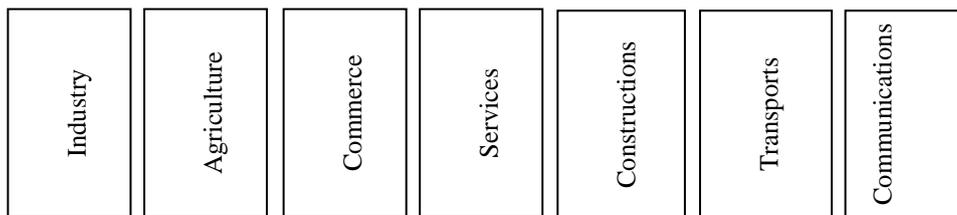


Fig. no. 1 Structural configuration of the industrial economy (capitalist)

Source: Nicolescu and Nicolescu, *Organization and management based on knowledge*, 2011, Pro Universitaria, p. 165

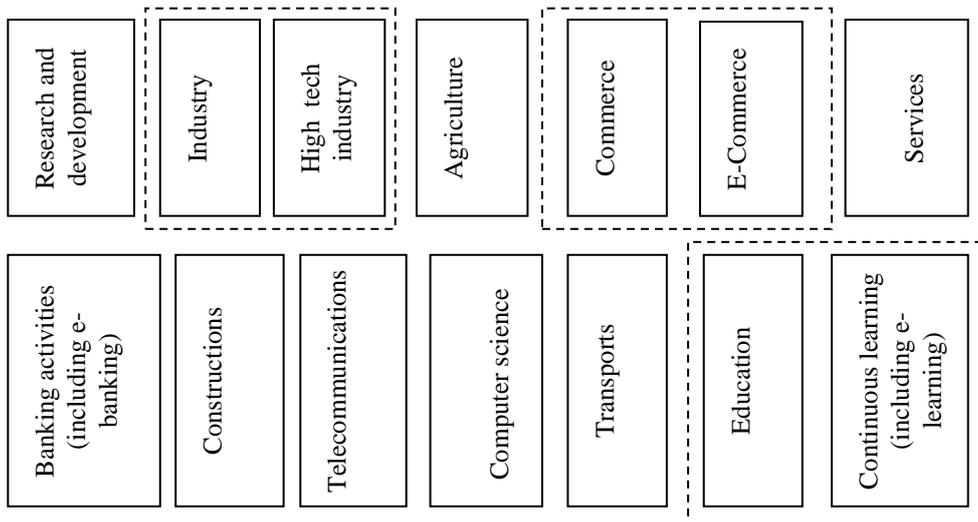


Fig. no. 2 Structural configuration of knowledge-based economy

Source: Nicolescu and Nicolescu, *Organization and management based on knowledge*, 2011, Pro Universitaria, p. 165

By comparing the two configurations we observe several *significant differences*:

- knowledge-based economy is more diversified and complex, comprising a double number of economic sectors, most of them comprising new sub-sectors focused on generating and use of knowledge;
- economy focused on knowledge incorporates new branches, non-existent four to five decades ago in the traditional industrial economy, such as: research and development, telecommunications or computer science. Work processes performed within these new branches consist mostly in the creation and use of knowledge with the scope of obtaining substantial quantities of added value;
- an important part of traditional branches have radically changed content, incorporating extensive processes of treating and capitalization of knowledge, based on the use of computers, electronics; in this category are included e-commerce, high tech industries so on;
- areas of activity which before were not a part of the economy, not being considered as value added generators changed in economic sectors, because of the knowledge revolution; this is the case of education, including of continuous learning and scientific research which have essential impact on the functionality and performance of knowledge - based economy.

Knowledge - based economy has a structure on sectors significantly different from the industrial economy or capitalist economy (classical) in which core branches were industry and agriculture which were predominant on multiple plans: as weight in total number of employees in the economy, as percentage in generating GDP, value added, revenues to the state budget so on.

Further on, we present briefly what *characterizes the structure of the knowledge - based economy*.

Services represent the main sector of the economy in which activates the majority of population and where is created an appreciable part of the newly generated added value.

Industry and agriculture have significantly lower quantitative shares compared with the previous period, but we should consider that productivity and productions reach impressive levels. A good example is represented by the USA, where in agriculture works less than 2% of the population but produces enormous, ensuring not only domestic satisfaction of consumption but also massive export of agricultural products.

Within industry increases the share of high-tech sub-sectors. OECD (Organization for Economic Co-operation and Development) already defined that high-tech industries are those where the rate of research and development in turnover is over 4%. So far, the share of these sectors in GDP is quite low even in developed countries.

Commerce remains a branch with a considerable share, but it has turned to E-commerce in a considerable proportion which is rapidly increasing.

Banking sector is growing fast, acting as a major branch of the economy and, within it e-banking becomes dominant.

Communications continue to grow, both quantitatively and qualitatively, telecommunications gradually becoming dominant and having substantial penetration in most economic sectors like industry, commerce and services, whose content changes substantially.

Computer science turns to a significant branch of the economy, with a major role in ensuring the functioning of society and economy at mondo, macro, meso and micro systems. The share of firms and employment in this economic sector - practically non-existent 50 years ago - is growing rapidly, having a strategic position in each national economy and in the world economy.

Transports maintain their logistic importance in the economy, in the context of recording great progress in terms of operating parameters: speed, consumption and energetic costs, functionality, inter-correlations and integration of different types of transport.

Research and development, both standalone and as part of classical branches of the economy is continuously increasing. Its essential role to generate new knowledge - the basics of knowledge-based economy - will give it a higher share and a growing impact on the structure and performance of each national economy.

Education, in the broad sense, expands rapidly, in addition to classical forms - primary, secondary, vocational and university – having as result an alert extension of training firms. E-learning is growing at the level of all types of education, this being a key element of reaching continuous learning.

We note that some experts, such as Kim (2003), approach *computer science and telecommunications as an economic sector in its own right that has a dual role:*

- provides platforms and infrastructure for processes of information treatment and for economic transactions in knowledge – based economy;
- they both represent a substantial part of the knowledge - based economy in which is generated a high proportion of value added, being an efficient source of economic wealth and human welfare.

Regardless of how economic sectors were identified and / or grouped, it is obvious that a new structure and functionality is specific to knowledge-based economy, caused by the conversion of knowledge into the essence and the main engine of development and economic performance.

3. Major changes in the types and content of occupations

Along with structural changes in the economy, complex mutations take place in the structure of occupations and human resources. They are in the same time both causes and - although it may seem paradoxical - consequences of changes in economic structure.

Conducted analyzes revealed that in terms of content and intensity of knowledge revolution influence on the structure of occupations performed by human resources, we can define *four categories of occupations:*

A. *New occupations, specific to knowledge-based economy*, that have emerged in the last 5 - 6 decades. This category includes: marketing specialists, computer scientists, analysts,

programmers, computer operators, system engineers, lobbyists, web designers so on. This category of occupations is rapidly diversifying and the number of specialists multiplies in geometric progression;

B. Occupations focused on knowledge, which appeared centuries or even millennia ago, but which profoundly change their content. For exemplification we list some of these occupations: teacher, professor, doctor, engineer, manager, statistician so on. Unlike the previous period, these occupations involve the use of a superior volume and quality of knowledge, for whose treatment are often used sophisticated technical equipment: computers, specialized equipment for tests, diagnostics, remote communication so on. If, hypothetically, would revive eminent doctors or teachers of a century or two ago, they basically would not be able to practice these profession because of substantial renewal of knowledge and specific technical means to practice these occupations. The number and social importance of specialists performing these socio-professional categories amplifies rapidly;

C. Traditional occupations whose content has partially changed to an appreciable level, knowledge revolution influencing less the content of their work and more the conditions of the work. In this category, we include lawyers, officials, engineers, economists, farmers so on. The number of these occupations is very high and some of them, especially when practiced in high tech sectors, tend to pass into the previous category of occupations;

D. Traditional occupations, some of them very old, appeared since antiquity, influenced to a very low extent or not at all by the current knowledge revolution. Among these occupations are: shepherd, priest, seller, waiter, carpenter, mason, barber, painter so on. Influence in these occupations is manifested mainly under informational relation.

Simultaneously, there is a tendency that *some occupations to disappear*, because of the replacement with other occupations: blacksmith, shoemakers, hatter so on.

Referring to *occupational structure presented above, following highlights should be made:*

- there will always be a coexistence of the four types of occupations, since they reflect elements of the real economy, which by their very nature, are affected in different ways and with different intensities by the knowledge revolution. Each of the four categories of occupations respond to certain categories of needs that will not disappear and whose satisfaction depends in significantly different proportions on developments in the field of knowledge and technical means;

- predominant tendency is to migrate from class D to class A and therefore, the proportion of category A and B occupations will increase continuously, while those in categories C and D will decrease;

- greatest and increasingly influence on the socio-economic functionality and performance have representatives of occupations from classes A and B; trend is that productivity, and respectively strategic advantage for organizations and for national economies, to represent in a massive proportion, contribution of the first two categories of occupations;

- operation and performance of an economy is based on all four categories of occupations and - respectively - human resources. Each category of occupations and their corresponding human resources is characterized by the followings:

- is necessary to enable well functioning of the economy and society, of normal life of the population;
 - involves a special training which needs to be provided through an appropriate mechanism;
 - requires specific environmental and working conditions;
 - legitimately wants to be recognized its usefulness and to be treated with dignity;
 - considering its specific characteristics, requires special managerial treatment, as to benefit of its economic and social potential.
- maximum productivity, economic and social performance and the standard of living is obtained when the four occupational categories are treated according to the specific needs and opportunities, legitimate aspirations of their occupants, when the focus is on creativity, motivation and harmonization of all persons, subordinated to development strategies at macro level and - in perspective - mondo system, mobilizing, coherent and stimulating. Overall effectiveness and performance of organizations, regions, industries, countries are synergistic results of all categories of occupations and human resources.

4. A new social class – knowledge based specialists

Knowledge revolution, new occupational structure and the proliferation of intellectual capital is reflected in the *appearance of a new social class – knowledge based specialists*.

Note that, as Cortada (1998) mentioned, specialists focused on knowledge, meaning people whose activity consisted of the production, storage, combination, use and sell of knowledge, existed since the primitive age (sorcerers, priests, shamans). Their number, variety and importance had continuously increased, reflecting volume amplification and diversification of knowledge, of its role and economic and social contribution.

In the last century, knowledge based specialists began to emerge as a distinct social category of its own. Analyzes showed that in 1958 in the USA, only activities centered on the treatment of information were consuming 29% of GDP and occupying 31% of the workforce. (Nicolescu and Nicolescu, 2005).

At present, we can say that in developed countries were built strong classes of knowledge based specialists. Their work has a *set of characteristics*, which distinguish them from other classes and social groups. Essentially, they consist in:

- a) possess numerous knowledge, both explicit and implicit, tacit, whose volume increases and renews permanently and substantially;
- b) nature of their work consists in gathering, acquiring, creating, combining, using and exploiting knowledge that is quantitatively dominant in all work processes they carry and contribute significantly to achieve objectives of the organizations to which they belong;
- c) labor productivity and performance of knowledge based specialists decisively depend on their ability to assimilate, create and use knowledge;
- d) they possess intellectual capital, represented especially by their tacit and explicit knowledge, giving them a key position in economic processes;

e) participate to continuous learning processes throughout their life in order to prevent the effects of obsolescence of knowledge, updating and enriching them;

f) continuous learning is a condition for survival as knowledge based specialists;

g) within the interests and needs that motivate knowledge based specialists, interests related to obtaining, possessing, creating, acquiring, combining, using and developing of knowledge are particularly extensive. Often these ones are ahead of financial, material or contextual interests, which usually were essential to all population. As a result, the whole behavior, decisional and acting manner of the knowledge based specialists is to satisfy their interests and needs related to knowledge, resulting in decisions and individual and social behaviors substantially different from those prevailing in the twentieth century, in industrial economy. In the early stages of building knowledge-based economy - which is the state of most developed countries – the behavior of knowledge based specialists amazes, shocks, is incomprehensible for most of the population;

h) knowledge based specialists have a high mobility, which manifests on multiple levels:

- organizational, changing relatively quickly one job to another or one function to another, both within the same organization and in different organizations;
- professional, by performing several professions and substantial changes in the nature of work processes performed in the same occupation or job;
- geographical, moving, travelling from one area to another, even from one country to another, for longer or shorter period of time, residence not being a major determinant in their work and life.

The base for these forms of social mobility of knowledge specialists is a strong intellectual and psychological mobility due to pronounced receptivity to novelty, high creative capacity, advanced availability for renewal and change, primacy of job satisfaction and results, considerable capacity to take risks and to operate under uncertainty. The foundation of these character and personality traits is largely represented by the knowledge they possess and the decisive role that acquisition, creation and use of knowledge have in forming behaviors, decisions and actions, both individual and group, social;

i) knowledge based specialists are focused and dedicated to profession, not to jobs, positions in an organization. Profession, continuously updated and enriched in terms of knowledge, is the vector of their development. As a result, knowledge based specialists concentrate, conscious and / or intuitively, on increasing professionalism, the other contextual determinants of development - family, organizational and social - having, most often, a relatively low impact on them;

j) knowledge based specialists obtain high income in the form of salaries, bonuses, shares in companies for which they work, together with a special moral treatment. Revenues and other moral and spiritual rewards they receive, reflect the economic value of their knowledge and intellectual capital they possess.

From the above presented, resulted a strong specificity of work, position and contribution of knowledge based specialists.

Starting with the presented analyzes, as well as certain statistics, we can state that in most developed countries, *knowledge based specialists represent a social class as:*

- they possess, as we presented, features that differentiate them from other components of society;
- are very numerous, with a tendency of representing the broader class of society.

5. Conclusions

This social class, based on knowledge, is the most important in the new economy because:

- has a great deal of intellectual capital, which is fundamental for knowledge-based economy. Without this capital, other forms of capital are inert, without generating economic substance;
- assumes and are assigned to major responsibilities in economic activities at micro, meso, macro and mondo economic systems;
- knowledge based specialists acknowledge the crucial role that knowledge and intellectual capital have, and are acting towards economic, social and political recognition;
- a large part society's components, including those who do not belong to the category of knowledge based specialists, perceive the decisive role of knowledge and knowledge based specialists in the economy and society and understand that it is in the general interest of the entire population them to able to capitalize and develop knowledge and, as such, are not averse to possess major responsibilities at all levels of the economy and society;
- have a very high productivity, superior to the other categories of resources, and therefore, have the main contribution to the production of GDP, with increasing tendency.

The assembly of presented elements represent strong arguments to assert that knowledge based specialists constitute the new progressive social class, which "pull" after it the whole economy and society. Its main particularity, which in our opinion, is the genesis of exceptional power and contribution to the development of knowledge-based economy and society, is *the double role of its components: the owners of intellectual capital and simultaneously active human resource participant, direct to economic activities*, with the greatest economic and social efficiency.

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