**Knowledge as Human Capital, in Correlation with the Demographic Factors**

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**Abstract.** Over the time, the mankind has encountered various forms of economic development. A point of reference is represented by the Industrial Revolutions, which laid the foundation of today's economy, specific to each country. Nowadays, people access the multiple opportunities generated by the advanced technology and opportunities in order to achieve a high step in acquiring knowledge. Given that, most often, in one’s development may appear certain impediments, we believe it is necessary to analyze the demographic factors that highlight the correlation between the status of the individual, the need for knowledge and financial possibilities. It is also necessary to know and analyze the types of income and their impact on the individual status.

From a theoretical point of view, we believe it is safe to say that we are witnessing the so called “Third Industrial Revolution”, also known as the "Knowledge Revolution". Thus, if the generalized used of steam power is considered the First Industrial Revolution and the automatization of the production processes is the main characteristic of the Second Industrial Revolution, then the Third Industrial Revolution can be defined as the wide spread usage of knowledge with the existing processes. Going deeper, one of the main mutations of this transition is the transformation of knowledge in resources, capital and products.

Furthermore, the Knowledge Revolution can be held responsible for the creation of new jobs, based on the usage of one’s knowledge. Basically, the persons working in this kind of positions, known as knowledge specialists, can be characterized as owners of tacit knowledge, formed out of a vast quantity of information in their field of action, alongside a great expertise, developed after using the information.

In this context we identify several ways of evaluating one’s ability to develop and to gather new expertise. First, we notice the capacity of learning and knowledge assimilation, following the graduation of the highest level of education. Besides the knowledge gained during studies and in order to amplify the development level, we identify a need for additional qualifications and trainings, required for gathering new knowledge and deepening those existing. Another way of developing is the ability to accumulate information and expertise at work. All of them are of great importance and the presence of each one, in a higher degree are strongly correlated with a high level of income and can help generating an advantage to an individual and, furthermore, positioning him on a better position in the society.

The importance of understanding this kind of demographic variables derives from the possibility of studying one's development capacity throughout his life. Besides the income, we consider of general interest the education, as well as both the housing and the employment status.

The objective of our article is to reflect the main characteristics (such as the distribution or the evolution) of the population incomes, in general, and those of the knowledge specialists, in particular, from the point of view of knowledge based economy.

**Keywords:** management, sustainable growth, abstract
1 The Knowledge Economy

Considering the generalized use of steam power as the First Industrial Revolution and, furthermore, the automatization of the production processes as the main characteristic of the Second Industrial Revolution, then the Third Industrial Revolution can be defined as the widespread usage of knowledge with the existing processes. Going deeper, one of the main mutations of this transition is the transformation of knowledge in resources, capital, and products.

Due to the Knowledge Revolution, we have been witnessing the creation of new jobs, based on the usage of one’s knowledge. The persons working in this kind of positions, known as knowledge specialists, can be characterized as owners of tacit knowledge, formed out of a vast quantity of information in their field of action, alongside a great expertise, developed after using the information.

1.1 Short Presentation

The concept of knowledge economy or knowledge-based economy has been a reference point in scientific research in recent years, with many specialized works devoted to it. Even so, there is still no unanimously accepted definition of it.

Bob Garvey and Bill Williamson believe that all types of economies are, in fact, knowledge-based economies. From their point of view, any form of economy could not exist if it was not based on a type of specialized knowledge. Pre-industrialized economies were based on a simple form of technology, based on human or animal strength, on craft skills, along with the understanding derived from their use. Beginning with the 15th and 16th centuries, with the development of world trade, and later through the First Industrial Revolution, a series of new skills, branches of science, or technological innovations have emerged that have produced profound changes in the daily, commercially, politically, legally or financially. They formed the basis for a new stage in the evolution of human society. (Garvey & Williamson, 2002, 14)

Peter Drucker is credited with introducing the concept of "knowledge economy" or "economy of knowledge and knowledge," the first mention of which appears in the book "The Age of Discontinuity" published in 1969.

The OECD also considers the concept of a knowledge-based economy as the result of an acknowledgment of the roles of knowledge and technology on economic growth. Moreover, according to the OECD, economies are increasingly dependent on production, distribution and use of knowledge. (https://www.oecd.org/sti/sci-tech/1913021.pdf)

Ovidiu Nicolescu (Nicolescu, 2011, 153) considers the knowledge-based economy as the result of the knowledge revolution. Thus, by taking a look at the evolution and development of industrial processes, some specialists considered the revolution of knowledge to be the third industrial revolution. Thus, if the first industrial revolution is defined by the transition to new production processes, notably by the introduction of the first production machines, and the second industrial revolution characterized by the large-scale use of steam engines and the introduction of the first communication tools as the telegraph, the third industrial revolution, the revolution of knowledge, is perceived as "the fundamental change from the physical resources economy to the knowledge based economy" (Nicolescu, 2011, 153).

Thus, the knowledge-based economy is defined, from a different perspective (Nicolescu, 2011, 160), as "the transformation of knowledge into raw material, capital, products and production factors, along with economic processes within the generation, sale, purchase, learning, storage, development, sharing and protection of knowledge become predominant and make decisive the making of profit and the long-term sustainability of the economy."
According to the Association for the Knowledge Economy, a number of forces can be identified that influence the change of economic rules, such as:
- Globalization;
- Using information technologies and information;
- Introducing new media;
- Increasing connectivity by increasing the use of computers.

Knowledge based economy, considered by Bob Garvey and Bill Williamson (Garvey & Williamson, 2002, 20), presents a number of defining features, such as:
- competitiveness and change, elements that influence its dynamics;
- organization through international production, communication and management networks;
- Dependence on R & D;
- identify and use commercial opportunities generated by new information and knowledge;
- strongly influenced by the quality of the learning process;
- High fragility, due to dependence on moral values, commitments and loyalty to people.

1.2 Characteristics and Typology

Looking from a wider perspective, knowledge refers to the theoretical or practical understanding of a subject that can be acquired either through experience or through educational training.

According to Nick Milton, knowledge can be defined, in a simplistic sense, as the element that differentiates humans from animal regan as well as computers. Essentially, knowledge is characteristic only to humans. (Milton 20005 4)
By making a brief segmentation of it, it can be said that, as a whole, knowledge is a pool of knowledge in many fields. In turn, knowledge is based on information that is "based on" data. Thus, data are punctual descriptions or representations of events or phenomena. For once to turn into information, it has to be contextualized and classified (http://www.knowledge-management-tools.net/knowledge-information-data.html). In other words, information is data that gives the receiver extra knowledge.

In the end, knowledge is the result of the couple of information and skills acquired as a result of the use of information. (Nicolescu, 2011, 20)

Knowledge is closely related to experience, understanding and action, and provides the framework for evaluating and incorporating new experiences and information.

The American Agency for International Development (AADI), quoted by Jessica Keyes (Keyes, 2004, 19) defines the three concepts in the form of three dimensions of knowledge management, as follows:

- The date is a fact, an event, or a phenomenon;
- Information is the context;
- Knowledge is the experience.

So it can be said that knowledge is characterized by ephemerality and, at the same time, by the uniqueness given by each person's experience and ability to understand each other. These aspects have a particular influence on knowledge-specific activities, especially on storage and, most importantly, on knowledge sharing.

Another very important consideration in sharing knowledge is the nature and degree of transferability. Starting from this criterion, knowledge is classified into two categories:

- Tacit knowledge - knowledge from their own experience, characterized by a high degree of difficulty in coding and reproducing them and which are, in essence, difficult, if not impossible, to be shared.

In general, tacit knowledge consists of technical abilities, characterized by a high degree of informality and subjectivity, difficult to define. They are non-codifiable, characteristic to each individual but can add value by coding and transforming into explicit knowledge.

Tactical knowledge is knowledge that is instinctively developed, which needs more words to be shared.

- Explicit Knowledge - Generalized knowledge, characterized by objectivity and a high potential for coding and sharing, and which are relatively easy to reproduce and transmit. Specifically, the knowledge that could be encoded and recorded in a certain form is explicit knowledge, whereas knowledge that could not be encoded is tacit knowledge.

From this point of view, Jessica Keyes believes that data and information is an explicit form of knowledge, while knowledge is a tacit form.

The Organization for European Cooperation and Development - OECD proposes a more pragmatic classification of knowledge as follows:

- Know-what, which provides information about facts, being specific to law and medicine;
- Know-why, which refers to scientific knowledge of the principles and laws of nature, the production of this type of knowledge being specific to specialized organizations such as research laboratories or universities;
- Know-how, which refers to the skills and abilities to do various activities, these being those knowledge created and maintained within an organization, specific to specialists in various fields;
- Know-who, who refers to those who know what to do and how to do certain qualities.

Ovidiu Nicolescu and Ciprian Nicolescu consider that the two fundamental characteristics of knowledge are strictness and absorption capacity.

Thus, strictness is defined as a possibility to encode tacit knowledge, to transform it into explicit knowledge. Absorption capacity is the ease of the receiver to acquire ("to perceive, understand and retain") the knowledge. (Nicolescu, 2011, 20)
Taking into account the ephemeral nature of tacit knowledge, it attaches great importance to the processes of treating them. Starting from this premise, many specialists in the field (such as Wiig, Nikols, or Rollet) have developed knowledge-cycles to incorporate, in a logical succession and interconnection, the main processes of knowledge processing. (Nicolescu, 2011, 98)

2 Knowledge Based Specialists

Starting from the impact of the Knowledge Revolution and, respectively, from the versatility of knowledge in the economy, they simultaneously fulfill the roles of capital, raw material, production factor and respectively product, the emergence and proliferation of the knowledge-based economy generated the necessary framework for the development of the specialists based on knowledge.

Various specialists have proposed variants for defining knowledge-based specialists (or employees). Thus, in the opinion of the Indian specialist B. Maheswari, the knowledge-based specialist is the person who creates new ideas, engages in communicating and disseminating knowledge or using them as a resource of development. Maheswari also considers those people involved in research and development activities, intensely concerned with innovation and progress in the organization. Those who disseminate the knowledge, of which teachers, trainers, and consultants are part, are mentioned.

Canadian Professor Michael Milles defines a knowledge-based specialist as the person who works to earn a living in a particular organization by focusing on the development and use of knowledge to accomplish their execution or managerial tasks. In the USA, the portrait of an SBC was portrayed as "the 30-50 year-old person with a high level of education, seeking to get the most material benefits with minimal effort, using top technologies and some involvement in running the activities ".

German specialist R. Reich supports the crucial importance of knowledge-based specialists in an organization, mentioning that they:

- possesses knowledge and abilities that represent a significant productive force within the organization;
- Represents for the organization an investment rather than an expense due to the contribution to the development of the organization.
- Have a special type of personal capital, because of their tacit knowledge, so that they have a decisive role in the knowledge-based firm.

Starting from the views of the three specialists, Ovidiu Nicolescu considers that they do not sufficiently reflect what is happening in a knowledge-based firm, pointing out that it is necessary to discuss two categories of approaches regarding the definition of a specialist based on knowledge.

The first approach is to broadly define the starting point of the knowledge cycle and the content of the knowledge process.

Thus, all "employees of an organization whose activity is focused on identifying, buying, learning, creating, storing, using, protecting and capitalizing on knowledge", ie treating knowledge in order to achieve the company's objectives.

It is mentioned as an example the formatting and processing of a study or article elaborated by a researcher within the firm, which is done by him instead of the operator as he takes less time than the one he would waste with training it on the specific requirements drafting conditions) and final work verification. The above example is based on Kim Taylor's opinion that the set of activities of the knowledge specialist can target the broad approach to a series of activities on:

- Discovering the data needed to produce information;
- Creating knowledge using certain types of data;
- Communicating and disseminating what has happened and learned;
- Promoting the networking of the relational and socialization system in the organization.

These activities may sometimes be considered as routine work that is difficult to separate from the work of knowledge-handling, especially when designing a scientific research work.
The second approach is to define in a narrow sense that knowledge-based specialists can be considered those whose work consists in the creation and use of knowledge with a pronounced modernity that is currently using top technology, information technology and communication technology.

According to Ovidiu Nicolescu, Angela Abbel and Nigel Oxbrow, the main characteristics of knowledge-based specialists are:

- Difficulties in finding a job;
- Preference for growth-enhancing jobs;
- The tendency to have 2-3 jobs simultaneously than a fixed post;
- Career evolution is based on professional development;
- Their recruitment is difficult;
- The tendency of autonomy within the firm;
- They are teamwork oriented;
- They are oriented towards the knowledge that provides a competitive advantage to the firm;
- Exhibit frequent use of information technologies;
- They show a rapid moral wear and tear, as well as a permanent concern for acquiring new knowledge;
- They have behavior with emotional accents;
- They have a cosmopolitan vision of career and life;
- They have a high standard of living;
- There are difficulties in keeping them in the company for a long time.

3 Case Study – Perception of Newly Graduates towards specialization and knowledge gathering

We consider that knowledge-based specialist can be defined based on the amount of resources invested in gathering information and knowledge in their area of expertise. Going deeper, we strongly believe that one knowledge-based specialist should be dedicated in developing ones skills and abilities, based on which his expertise is defined, thus looking into participating to new classes and workshops in his domain.

Therefore, we have considerate the classes one employee took in order to gather new information and knowledge as a key indicator in sustaining our idea.

The current article includes a brief analysis of the behavior of young graduates of an educational institution in terms of continuous improvement of knowledge, personal development and finding different ways of pre-training, so as to obtain a safe job, stability, safety and financial compensation in line with the training and the accumulated knowledge.

The results of the analysis were obtained by interviewing a sample of 400 young people aged between 25-30 years, and the answers were obtained through the Computer Assisted Web Interviewing (CAWI) methodology, which is also common under the name of online interviewing. It is a collection technique characterized by the speed of data collection. Obtaining responses implies that respondents receive a participation invitation that includes a unique link for each respondent, and completes the questionnaire that opens as a web page. The structure of the sample is composed of respondents aged 25-30 years, graduates of a higher education institution.

The demographic variable chosen to replicate the sample's representativeness is the development region. Thus, the sample was divided as follows: North East Region (19%), North West Region (13%), Bucharest Ilfov Region (12%), South Muntenia Region (14% ), Central Region (12%), West Region (9%), South West Oltenia Region (10%).
The data were obtained by sending invitations to participate in the survey, based on extracting from a panel of online respondents a random number of respondents to follow the structure of the above regions. The participants were selected for the target group, namely: university graduates (college and postgraduate students) who are aged between 25 and 30 and live on the territory of Romania. In order to identify the last level of graduate education, the questionnaire contained the question "What is the last graduated level of education?". From this question, the following results were obtained:

Thus, 56% of the respondents have only a Bachelor Degree, while the 44% difference has obtained a higher degree, such as a master degree, or have completed a postgraduate school. Because the main objective of this article is to highlight the interest of young graduates, the questionnaire also had the question "Have more qualifications been required to get a job?"
The results obtained show that of the total respondents, only 23% attended an additional qualification course, while 77% did not attend such a course. In order to find out the reasons behind the decision not to attend an additional qualification course, there are:
- Not required as the level of training during the studies was sufficient to get a job (82%);
- Lack of financial resources (10%);
- Absence of locations for courses in the area where the respondent lives (4%);
- Another reason (4%).

In order to identify the main areas of interest to which the person who is attending additional courses pays attention in order to improve their knowledge, the following question was included in the questionnaire: "In what domain did you have attended additional courses?". Thus, the most sought-after area of interest is represented by IT qualifications (24% of respondents who attended additional
courses and turned their attention to this direction. Other areas that are also on the list of those wishing to pursue such courses include human resources (17%) and services (16%).

Due to the fact that the main objective of the questionnaire is to identify the young people's interest in continuously improving their knowledge by following additional training courses, the question "Would you be interested in attending additional qualification courses?" was included at the end of the questionnaire. Thus, in the total sample of 400 respondents, 306 of them stated at the beginning of the questionnaire that they did not attend qualifying courses, invoking the reasons listed above. Of these, 85% are interested in attending courses and improving or deepening new knowledge.

Fig. 6 In what domain did you have attended additional courses?

![Pie chart showing domain preferences](image)

Adapted after own research

Fig 7 Would you be interested in attending additional qualification courses?

![Pie chart showing interest](image)

Adapted after own research
Thus, the need to continually grow, to reach new stairs and to permanently improve the condition has become a major concern and is still one of the great concerns of both young graduates and those who have been in the workplace for a long time.

In the end, as already stated, a knowledge-based specialist can be defined by the number of attended courses and workshop required in order to fully develop his skills.

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