



Human Capital Composition and Main Sources of Human Capital Formation

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Abstract: The article examines the different approaches to describing the internal structure of human capital, as well as the main sources of human capital formation. The author study the wide range of literature related to the basic components of human capital, sources of human capital formation in order to identify the common aspects, and generalize the ideas. The author propose that four main components — abilities, knowledge, skills and personality constitutes the human capital.

Key words: human capital, human capital components, knowledge, skills, abilities, personality, human capital formation sources.

Introduction

In the 21st century, the human factor, or rather, human capital, is attracting more and more attention as a decisive factor of economic growth. This is partly explained by the fact that human capital is mainly characterized by knowledge and the world economy is rapidly moving towards a knowledge-based economy. In addition, the new era is often called the “digital age” and advances in digital technology are the product of human knowledge and intelligence. Human capital leads to the effective organization of production cycle and an increase in productivity in the country, regular structural and technological renewal of national economy. As a result, the national wealth gets increased, the social well-being gets improved, and the poverty gets reduced.

Although human capital is widely recognized as the driving force behind economic development and the main source of social well-being [1; 2; 3; 4; 5], scholars still have not come up with a general definition of the term itself. Studies in the field mainly put forward various concepts such as human abilities, knowledge, skills, or competencies in order to explain the exact meaning of human capital. As the terms are used interchangeably, it leads to confusion in describing human capital and identifying its key components.

Among scientists, human capital is typically conceptualized using two — narrow and broad — approaches. The narrow approach studies human capital at the micro level, or more precisely, at an organization level, while the broad approach examines the concept at the macro level, or at the scale of the whole economy.

According to the narrow approach, human capital is considered the capabilities of an organization’s employees that are relevant to their functions and their capacity to consistently enrich their knowledge, skills, and experiences through individual learning. At the micro-level of classification, scholars propose to include a number of task-specific skills (motor skills, communication skills, skills related to dealing with information, etc.) as human capital components [6].

Thus, the whole set of capabilities of employees plays a critical role in ensuring an organization’s competitive advantage as it strongly affects performance and productivity. Therefore, organizations

are willing to invest in the training of their employees. And it can explain why the global race for talent is deepening year by year: the more well-educated and skilled professionals an organization hires, the greater and more competitive value it tends to create.

As for the broad approach, in the early stages, human capital research emphasized three dimensions: “education, training, and experience”. Over time, the explanation of human capital structure and its basic components underwent certain changes and improvements within the concept itself. Schultz included health and integral migration in his version of human capital structure. Brooking and Motta proposed considering creativity and competence. Later researchers claimed that attitude, motivation and commitment to work had to be taken into account as critical components [7].

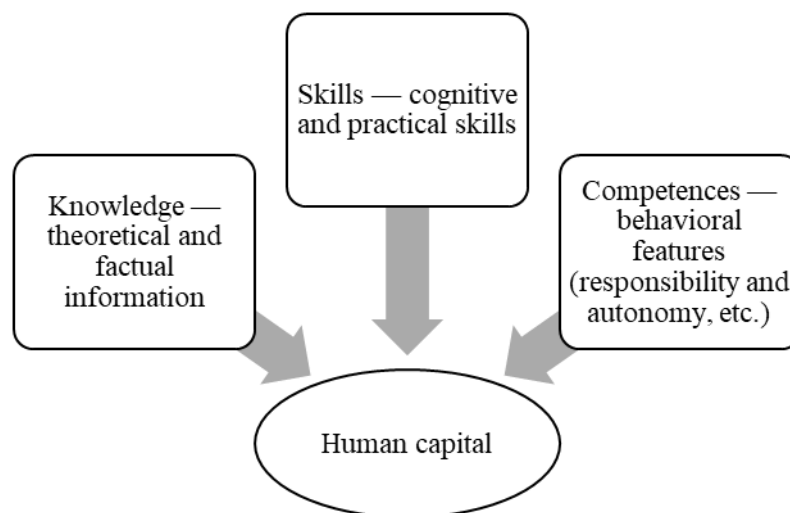
Thus, human capital can be defined as the full mental and physical capacity of people for socially useful work that benefits society and contributes to economic growth, mental and physical health, the total potential of knowledge, skills and experiences accumulated over the years, and, together with this, the possibility to represent the existing potential.

Overall, studies show there are various classifications and groupings of human capital components among scholars. However, we can notice certain similarities or generalities while examining the different structures and definitions that have been proposed by researchers in the field so far. Thus, in this article, we study the previous research related to the human capital structure and make an attempt to generalize the ideas.

Methods and Literature Review

The research results in the paper are based on the scientific methods of analysis-synthesis and comparison. And for the beginning, we provide a brief literature review.

OECD describes human capital as, “the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being” [8]. This definition is further extended to include non-economic benefits, such as health conditions, longer life-spans, better lifestyles, and a higher subjective well-being [9].



Picture 1. The EU approach to human capital structure.

According to one of the EU projects dedicated to the changing skill needs in region, human capital is a combination of three elements: knowledge, skills and competences [10].

Notably, one can observe minor differences in the approaches used to determine the structure of human capital. According to M. Zaytseva, human capital is composed of six basic components: labor force, knowledge, labor activity, intellectual labor, managerial labor, and living environment [11]:

- labor force represents a quantitative set of the population that is capable of carrying out socially beneficial activities;

- b) knowledge is gained through cognitive activity that is necessary for the fulfillment of professional tasks;
- c) labor activity means social behavior of a person, which allows to realize knowledge, skills and abilities in the process of implementation professional tasks;
- d) living environment refers to a place of permanent residence — higher quality of life and level of social well-being in the territory leads to higher qualitative indicators of its human capital;
- e) intellectual labor is a type of creative activity based mainly on mental labor, the result of which is the creation of new technologies, high-tech industries, technical devices;
- f) Managerial labor is a type of activity, the object of which is labor resources.

M. Zaytseva argues that the components of human capital are interrelated and interdependent, and at the same time, they are non-replaceable and bring the same value in the formation of human capital. However, the argument poses some misunderstandings. For instance, intellectual and managerial labor can be unified into one category. Although they tend to perform different functions and may bring different results, the nature of the work and resources required are quite the same. Besides, they are both part of labor activity. Considering them as separate components complicates the phenomenon.

L. Tamilina proposes the idea that the simplistic definition of human capital can be expanded “by adding three attributes that, according to both economic and managerial studies, are important determinants of the process of knowledge accumulation or skills acquisition: genetics, personality, and motivation”. Therefore, she argues that human capital consists of five main elements [12]:

1. Genetics – predefines effectiveness of learning);
2. Personality – predefines an individual’s propensity to develop certain skills;
3. Motivation – determines an individual’s willingness to learn;
4. Knowledge – factual information or conceptual frameworks about processes, procedures, and relationships;
5. Skills – an effort to use acquired knowledge in practice for carrying out activities or job functions.

And human capital concept can broadly be conceptualized as being accumulated through two main channels: learning and work circumstances.

Notably, L. Tamilina studies motivation as a separate component of human capital. She describes motivation as “a psychological feature predefining a person’s willingness to learn”. However, motivation can be considered a characteristic related to personality, as the level of motivation or whether one has it at all depends on what kind of personality he manages to formulate.

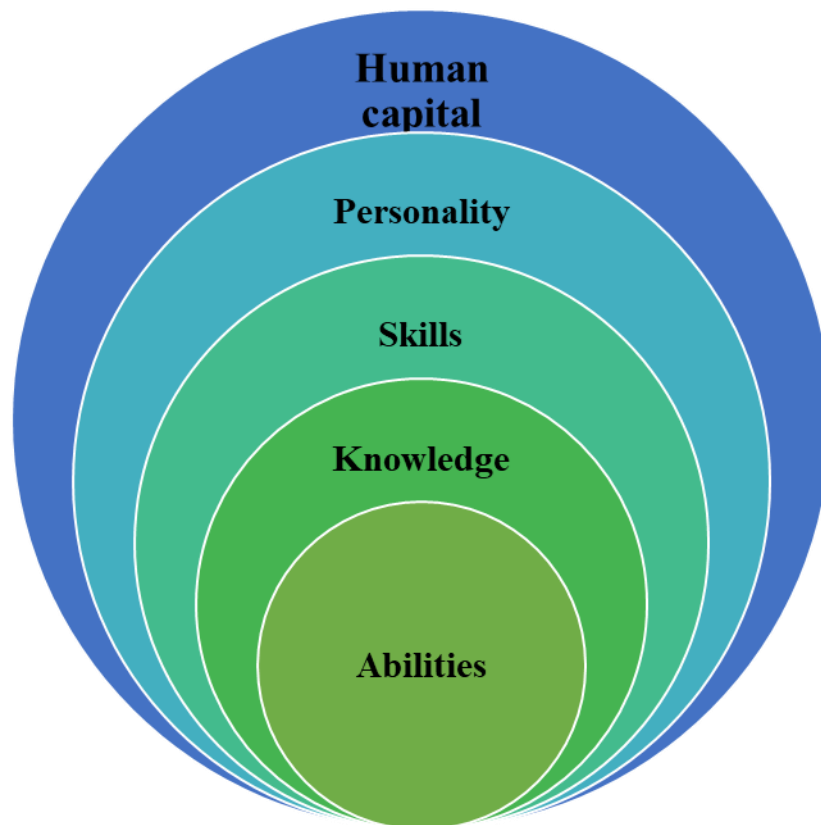
Table 1. Different approaches to explaining human capital components. [7; 8; 10; 11; 12]

Year	Author	Basic category or components
1958	J. Mincer	training and education
1961	T. Schultz	training and education health and internal migration
1996	A. Brooking E. Motta	knowledge, creativity, competence and experience
1996	M. A. Youndt S. A. Snell J. W. Dean Jr D. P. Lepak	skills, training, and attitude
2000	R. Dzinkowski	competencies, knowledge, and skills
2001	OECD	knowledge, skills, competencies and attributes
2003	A. Aragón-Sánchez	skills, training, and attitude

	I. Barba-Aragón R. Sanz-Valle	
2012	EU	knowledge, skills, competencies
2012	L. Tamilina	genetics, personality, motivation, knowledge, and skills
2016	M. Pasban S. H. Nojehdeh	skills, training, and attitude
2019	A. R. Lufungula R. A. Borromeo	skills, training, and attitude
2019	M. Zaytseva	labor force, knowledge, labor activity, intellectual labor, managerial labor, and living environment
2019	H. Lenihan H. McGuirk K. R. Murphy	education, professional knowledge, personal experience, skills, and creativity

Results and Discussion

Despite such diversity among approaches, we can notice certain similarities or generalities while examining the different structures and definitions that have been proposed by researchers in the field so far. And they can serve as an justification for the structure we are willing to propose in our research. Thus, in our opinion, human capital can be viewed as a set of four critical components: abilities (mental and physical), knowledge, skills and personality.



Picture 2. The fundamental components of human capital.

Abilities in humans are primarily innate and less likely to be acquired. Abilities support a person’s being mentally and physically able to get involved in an active learning and working process. Thus, they are quite fundamental categories that determine whether a human is able to participate in active learning, socio-economic relations, and the production process or not. Therefore, abilities are assumed to be the very basis of the components of human capital. Since it is an individual’s personal innate attribute, it cannot be dissociated from the person who possesses it, and transferring it is also impossible.

As one of the basic components of human capital, **knowledge** refers to factual information or conceptual frameworks that people obtain through formal and informal education and training during their lives. The stock of knowledge is accumulated as a result of the learning processes undertaken by an individual over time. Knowledge facilitates humans' realization and comprehension of their surroundings, communication and interaction with each other, and hence their integration into society. The distinctive feature of knowledge is that it can be easily dissociated from the individual and transferred from one person to another.

Skills can be described as being competent for the application of acquired knowledge in practice in order to perform various tasks. Skills are usually defined as an ability to apply gained knowledge in practice while carrying out job-related tasks or functions. According to L. Tamilina, the definition emphasizes that skills are not innate features but rather the result of learning processes, and their accumulation can be effected and changed through practice or training [12]. Notably, scholars propose various approaches to classifying skills: generic and task- or occupation-specific, hard and soft skills, etc [10]. Skills can also be transferred from one individual to another through observation, demonstration, and other forms of intentional learning.

Personality, in terms of the human capital concept, can be viewed as a force stimulating humans to realize their potential for the sake of society. In this case, human features like attitudes, values, responsibility, and commitment to a certain profession or task account for the fundamentals of the human personality. Moreover, there is an approach in which personality is described as a psychological feature predefining an individual's propensity to develop certain skills [12]. Although a group of researchers argue that personality is basically innate, we consider it to be more formulated on the basis of human knowledge and experience gained through life. It means human personalities tend to change over time.

With some clarity regarding human capital structure, we can investigate the primary sources of human capital formation. Accumulation, formation, and development of human capital require certain conditions to be created and measures to be implemented in a country. And they are highly dependent on the basic components of human capital, as humans need certain circumstances to develop each of them.

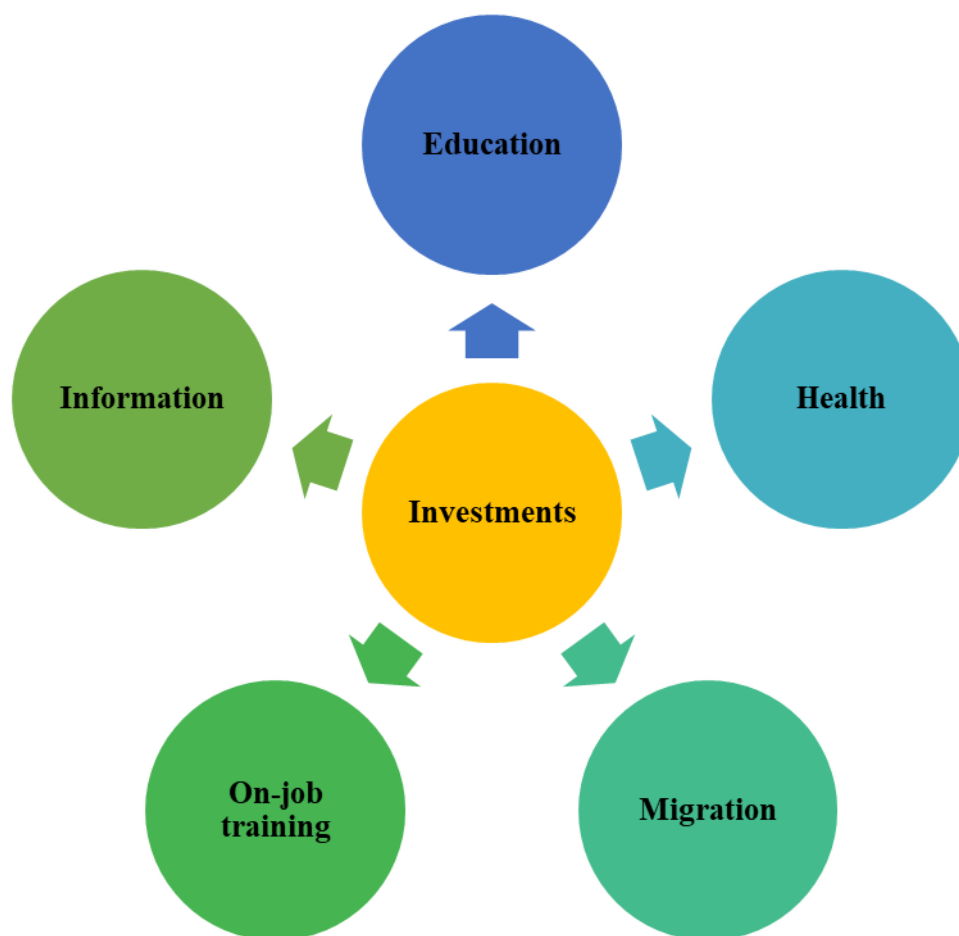
According to OECD, the life-wide settings relevant to human capital creation are diverse [13; p. 12]:

- Formal education (early childhood, compulsory education, post-compulsory vocational or general education, tertiary education, adult education etc.);
- non-formal enterprise-based training and public labor market training;
- the experience acquired in working life in different types of organization and through specific activities such as R&D (the level of skill employed at work can be one of the strongest influences on net human capital formation);
- The large amount of relevant learning that takes place in the more informal environments of, for instance, interest networks, families and communities. Learning and preparation for learning that is nurtured within the family and early childcare settings provide an important basis for future acquisition of human capital. Learning at home can potentially be enriched as access to media and information networks expands. Informal environments become increasingly important as countries move towards diverse, individualized forms of learning.

The OECD approach is characterized by its focus on accumulating knowledge and developing skills. Existing circumstances around people are expected to provide them with enough opportunity to acquire the knowledge and skills needed to reach economic and non-economic well-being, or, in other words, to improve their lives.

The existing approaches to the sources of human capital formation can be summarized into an idea according to which human capital formation occurs through five main channels:

1. education — the most critical source of human capital formation, as it can guarantee increased income, fewer health risks, higher social status, and a better contribution to human capital formation through investments in one's family and children;
2. health — health conditions of the population significantly influence the formation of the labor force and human capital quality around the country; the better settings to ensure the well-being of the human capital – the more productive the national economy gets;
3. migration — individuals can improve their opportunities to get higher salaries, better job offers and workplace conditions, as well as upgrade their standard of living, through migration;
4. on-job training — providing on-the-job training helps to enhance labor productivity, stimulate the adaptation of new staff, and up-to-date the skills of existing employees.
5. information — investments in information as a source of human capital refers to spending on accumulating data associated with human capital formation for the purpose of further research and analysis.



Picture 3. Main sources of human capital formation.

Conclusion

It should be noted that the research devoted to the structure of human capital has one absolute generality. In almost all of them, knowledge is recognized as one of the main components of human capital. Logically, abilities are primary because a person's ability to learn and work is largely dependent on his mental and physical health. However, it should also be noted that in a society with high-quality education, the level of medical literacy of the population tends to increase, and thanks to advanced specialists in the field of health care as well as in other fields, the probability of a healthy generation being born is much higher. From this point of view, knowledge can be considered the main pillar of human capital.

Creating the necessary foundations for the development of human capital first of all requires a clear classification of its main components. The reason is that certain conditions are necessary for the development of each component of human capital. As a result of our studies, we have concluded that human capital consists of a complex of abilities, knowledge, skills, and personalities.

The existing approaches to the sources of human capital formation can be summarized into an idea according to which human capital formation occurs through five main channels: education, health, migration, on-job-training and information.

Thus, health, education, and the labor market play important roles in the development of human capital. A society with a well-developed and inclusive health care system is more likely to have a healthy generation with an active lifestyle. Only a competitive education system and quality education are able to prepare specialists who meet the requirements of the modern labor market. At the same time, the openness of the labor market and the high level of employment create the basis for the regular accumulation, renewal and development of human capital. The increase in unemployment leads to a decrease in the level of skills of labor resources due to the fact that they do not apply the knowledge they acquired.

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