

EFFICIENCY OF THE WORK OF HUMAN CAPITAL IN COMING TO SOCIETY 5.0

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Formulation of the problem. The research was conducted among employees who constitute human capital in Polish companies and a subject of research was the effectiveness of human capital work in the transition to the society 5.0. *The purpose of the article* is to analyze the efficiency of using human capital in the context of the onset of society 5.0 and the features of digitization of human life. *The methodological basis of the research* was the logical methods of information processing, statistical analysis, comparison. *The main hypothesis of the study* was the assumption that in order to determine the level of sustainable development of a single country at the international level, an assessment of the economic, social, and environmental components of sustainable development is necessary. *Presenting main material.* The analysis of the literature of Polish and foreign authors as well as online materials were used to achieve the research goal and to verify the thesis. Moreover, a reference was made to the results obtained in the research project "Development of human capital in society 5.0" (670 people took part in the research, and it is still being continued), which formed the basis of questionnaire analysis. The results of these research made a significant contribution to the process of managing contemporary organizations which operate in the conditions of increasing digitalization. *Originality and practical significance of the research.* Observation of current reality allows us to draw a conclusion that the development of human capital is one of the most important conditions that can lead to growth of effectiveness in employees' performance and company's development. This is particularly important at a current stage of development where the acceleration in scientific and technological progress leads to rapid changes and changes in knowledge and skills. *Conclusions.* The issues presented in the article certainly do not exhaust the topic, but it can be a starting point for deeper analysis, and can also be a premise for new scientific challenges. Challenges for further scientific inquiries and identifying new directions for further analytical research which are undoubtedly determined by changes in the current reality.

Key words:

development, human capital, investments, society 5.0.

ЕФЕКТИВНІСТЬ ВИКОРИСТАННЯ ЛЮДСЬКОГО КАПІТАЛУ В КОНТЕКСТІ НАСТАННЯ СУСПІЛЬСТВА 5.0

Постановка проблеми. Дослідження проводилося серед працівників, які становлять людський капітал польських компаній, і предметом дослідження була ефективність роботи людського капіталу в умовах переходу до суспільства 5.0. *Метою статті* є аналіз ефективності використання людського капіталу в контексті настання суспільства 5.0 та особливостей цифровізації людського життя. *Методологічною основою дослідження* були логічні методи обробки інформації, статистичного аналізу, порівняння. *Основною гіпотезою дослідження* було припущення, що для визначення рівня сталого розвитку окремої країни на міжнародному рівні необхідна оцінка економічної, соціальної та екологічної складових сталого розвитку. *Виклад основного матеріалу.* Для досягнення поставленої мети дослідження та перевірки тези використано аналіз літератури польських та зарубіжних авторів, а також матеріали в Інтернеті. Крім того, було зроблено посилання на результати, отримані в дослідницькому проекті «Розвиток людського капіталу в суспільстві 5.0» (у дослідженні взяло участь 670 осіб, воно ще триває), які лягли в основу аналізу анкети. Результати цих досліджень зробили вагомий внесок у процес управління сучасними організаціями, які працюють в умовах посилення цифровізації. *Оригінальність та практична значущість дослідження.* Спостереження за поточною дій-

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сністю дозволяє зробити висновок, що розвиток людського капіталу є однією з найважливіших умов, яка може призвести до зростання ефективності роботи співробітників і розвитку компанії. Це особливо важливо на сучасному етапі розвитку, коли прискорення науково-технічного прогресу призводить до швидких змін і змін у знаннях і навичках. *Висновки.* Проблеми, викладені в статті, безумовно, не вичерпують теми, але можуть стати відправною точкою для глибшого аналізу, а також можуть стати передумовою для нових наукових завдань. Виклики подальших наукових пошуків та визначення нових напрямів подальших аналітичних досліджень, які, безперечно, зумовлені змінами сучасної реальності.

Ключові слова:

розвиток, людський капітал, інвестиції, суспільство 5.0.

Formulation of the problem. Economy as a social system is based on rules of behaviour, organization of social coexistence, specific culture and human activity. People work to earn a decent living for themselves and their families. Creating a new reality and predicting future events depend a lot on an organization and human resources. Managers who want to adapt to upcoming changes are forced to create working conditions proper for the new reality in society 5.0.

Current economic growth is caused mainly by the development of Artificial Intelligence. We are living at the time in which globalization and digital technology transformation bring significant changes in the work environment. Internet of Things, Artificial Intelligence and robotics create new values which become pillars of a modern society

Employee's knowledge, attitude to work, motivation, level of personal development, health, talents, experience and skills constitute specific values for the company. These features are also key factors when we talk about human capital values in the work environment. Human capital value can change depending on various factors. One of the most important factors that influence these changes is digital technology development as it changes the usefulness of human capital in the work environment. Human's attitude towards work is changing, previously changed knowledge may turn out useless. Nowadays employees are required to possess new skills and management realize that individual approach towards employees is becoming a norm.

Employees' professional development means acquiring new competencies, knowledge and skills, which can be used in their present and future professional activity. It is a process of gaining knowledge, professional training, reskilling and improving employees' qualifications which allows an employee to

accomplish current tasks and perform new professional functions.

Investing in human capital aims at improving employees' skills and qualifications. These investments must contribute to creating a favorable climate for sharing knowledge within a team, improving employees' motivation and increasing productivity. Investing in development of human capital must have an effect in the future which will enable employees to carry out their tasks freely in new and unpredictable conditions. Creating the right conditions for increasing human capital efficiency is not an easy task. However, ongoing technological changes and acceleration of civilization development require making every effort to welcome the new reality in which it will be easier for all market players to find themselves. There are a lot of reasons for a need to deepen the research in the field of human capital development.

Due to the importance of the above-mentioned issues, the aim of the study is analysis and evaluation of selected elements of human capital productivity in the transition to society 5.0. Empirical research was subordinated to this aim. The analysis of this research allowed us to verify the thesis of this chapter: the level of investment in the development of human capital in a company remains at an average level. Effectiveness of work of human capital is mainly related to the operational efficiency and effectiveness and a lot of companies already comply with the requirements of the society 5.0.

The research was conducted among employees who constitute human capital in Polish companies and a subject of research was the effectiveness of human capital work in the transition to the society 5.0.

The analysis of the literature of Polish and foreign authors as well as online materials were used to achieve the research goal and to verify the thesis. Moreover, a reference was made to the results obtained in the research project





“Development of human capital in society 5.0” (670 people took part in the research, and it is still being continued) which formed the basis of questionnaire analysis. The results of these research made a significant contribution to the process of managing contemporary organizations which operate in the conditions of increasing digitalization.

Before the research question was raised knowledge about it was insufficient as it had not been satisfactorily discussed. This study can contribute to broadening knowledge about the presented issue as well as draw attention to an important aspect of questions related to the effectiveness of human capital work in transition to society 5.0.

Analysis of the rest of the research and publications. Professional development is a continuous and complex process which includes: professional training, career development and update qualifications. Implantation of a concept of human capital development means creating a flexible and specific system of professional training, focused on solving strategic problems of an organization. Education and the learning process play an unambiguous role in achieving professional goals [1, p.121-122].

The purpose of the article is to analyze the efficiency of using human capital in the context of the onset of society 5.0 and the features of digitization of human life.

Presentation of the main research material. The development of human capital enables to solve the problems faced by organizations, to increase productivity and quality of work, as well as problems faced by employees - it increases the standard of living, allows to implement knowledge and skills. Employees face the need of being more competitive in relation to Artificial Intelligence, they are forced to demonstrate skills that will give them a chance to remain on the labor market.

However, human capital management must be concentrated on solving the following problems:

- development of a strategy for formation of highly-qualified staff;
- identification of employees' need for professional training;
- selection of forms and methods of employees' professional development;
- selection of software, methodology and logistics of a training process as a key to quality;

- ensure financial means which will allow organizing all necessary training.

A key factor in management of professional development constitutes an organization of interrelated processes of shaping employee's competitive personality traits, these processes include: professional training, upbringing, consulting, preparation and adaptation. Professional development results in wide, intellectual and professional personal development, it helps to expend human's erudition and strengthens self-confidence.

Some of the most important spheres of human capital development are: bringing out employee's potential, stable employment, employment of elderly people, proper relations persons at risk of social exclusion, health and health care system as well as improvement of qualifications and competencies of people already employed.

I would like to present here some interesting results of the above-described research concerning the main goal of this study. Chart No 1 presents the level of investments in the development of human capital in consideration with the ideas and adopted direction of professional development of human capital.

The respondents were asked a question: To what extent does your company contribute to your development? Respondents' answers differed but most often they pointed out that the level of contribution of the company they work for in their development is on an average level. Such an answer was given by 40% of respondents. At the same time 36% of respondents think their employers care enough about the employees' development. At the same time only 10% of respondents think that their employers care about the development of human capital at a very high level.

A lot of managers realize that investing in human capital development is necessary but not all of them fulfill this need which can be due to various reasons. The market dictates conditions that make it necessary to reevaluate the role of staff in a company. Satisfying the needs of human capital requires a lot of changes from an employer. A lot of companies adopted a policy that employees should develop their skills on their own. Such an attitude is due to cost savings and a threat that the employee, whose development company financed, may leave the job, etc.

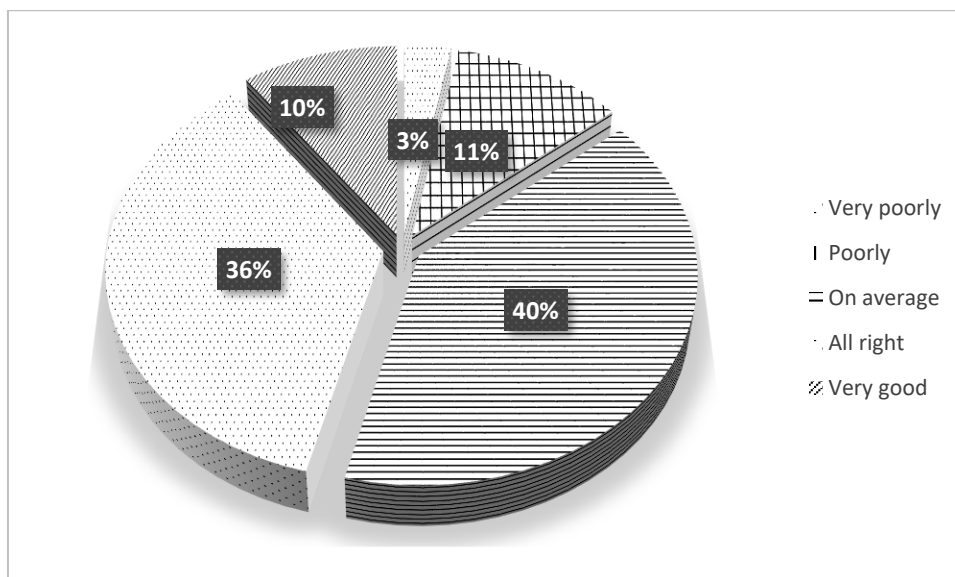


Figure 1 – Level of investment in human capital development in a company
Source: developed on the basis of own research

Investing in human capital is extremely important, especially in times of intensive development of new technologies that redefines workplaces but this process requires individualized approach and taking into account satisfying diverse needs of employees as well as creating the conditions for employees' independent actions.

Human capital, in their actions, always follows specific rules, which can be: their own benefits and attempts to satisfy unmet needs. The quality of employees' performance depends on knowledge, experience, willingness to act, conditions in which they act and technological changes at the workplace. The management faces challenges that are difficult to meet in order to reach the high level of human capital effectiveness.

Effectiveness is a concept that has not been defined in the literature in an explicit way. According to common economic theories, the term refers to the concept *Optimum* Pareto, i.e. such a combination of goods at which the level of utility of all market participants is completely maximized [9]. This type of effectiveness involves not only the proper choice of goods, but also their appropriate allocation among consumers in order to maximize the level of their satisfaction [5].

Researchers who carry out research on effectiveness interpret this concept differently. It is worth emphasizing which terms are used in the literature to interpret this concept: "It is defined by such terms as: efficiency of operation, posi-

tive result, profitability, productivity, efficiency, effectiveness, expediency, rationality, economy and utility" [8].

Thus, effectiveness can be defined as a positive result, effectiveness of action and efficiency and ability to perform tasks. Effectiveness influences implementation of the strategy and goals of an enterprise, so that the company can grow and its importance against competitors increases.

B. Skowron-Mielik [7] considers the question of work effectiveness. The author notes that work effectiveness is a ratio of labor effects to labor input: "relating the magnitude of effects to a unit of human labor can be defined as labor efficiency, whereby the measure of human labor is most often the amount of time devoting to achieving goals, but it can also be the number of employees, although due to different working hours of employees, it is not a precise measure.

Pyszka also considers the ways of understanding effectiveness. In his work, he notes that the understanding of effectiveness can be broad, and its definition can be understood from various perspectives.

Respondents' answers to the question: "how is the need for work effectiveness of human capital determined in your company?" varied. For most companies the importance of work effectiveness of human capital is mainly related to efficiency and effectiveness of operations, as indicated by 33% of the surveyed employees. While positive results of work were indicated by 18% of the respondents.



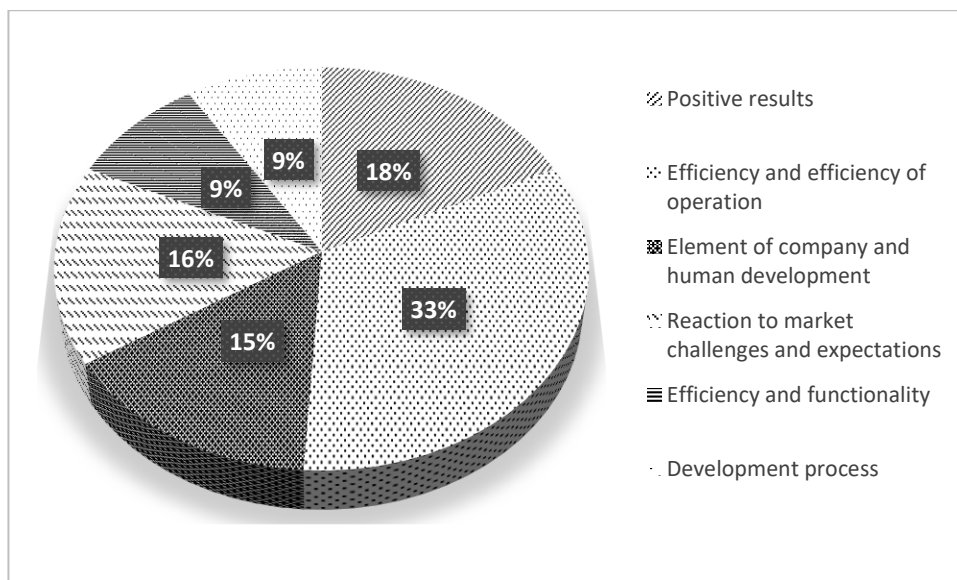


Figure 2 – Specifying work effectiveness of human capital in a company
Source: developed on the basis of own research

The next element indicated was the response to challenges and expectations (16%) and further the element of company and human development - indicated by 15% of respondents. The survey results show that currently efficiency and functionality and development process, both indicated by 9% of respondents, are at the lowest level of importance.

The method of measuring the employees' work effectiveness can be started from determining whether we are going to evaluate the work effectiveness of a single employee, group of employees, departments and organizations of a company or the effectiveness of the enterprise and its crew as a whole.

The researchers agree that the measurement of performance effectiveness should be performed using effectiveness indicators. M. Rydzewska-Włodarczyk makes an interesting comment on the subject: "in opposition to traditional approaches to measurement of effectiveness mainly based on financial performance, it is commonly accepted that the measurement of effectiveness should be carried out by using both financial and non-financial as well as quantitative and qualitative indicators. Certainly, an important point of reference for effective measurement is the set of goals and tasks [4].

Effectiveness of operations can be measured on three levels:

- the level of organization evaluation
- the level of a team evaluation
- the level of a workstation evaluation

It is worth presenting here some interesting methods of effectiveness performance:

- strategic scorecard
- audit of personnel function
- personnel controlling

Strategic scorecard (BSC) is a tool "that enables translating strategy of a given enterprise into specific tasks and measures of their implementation for individual organizational units". In this method enterprises use the concept of monitoring of strategy in the long-term. An enterprise that applies this method regularly evaluates the state of an organization. It is done using consistent systems.

The concept of a strategic scorecard is based on:

- dividing an organization into major strategic areas,
- coordination of these areas by putting them into perspectives and describing them with specific measurements.

These activities are intended to help understand a company's strategy and focus on creating consistency between goals and activities. The concept of strategic scorecard helps the organization to achieve its goals. The method discussed is also a form of strategic control.

Another measure is an audit of personnel function, "personnel audit is an audit whose field of diagnosis is the personnel employed in an organization" [3]. Audit of personnel function can be defined as "structured, independent and methodical study, and at the same time assessment of human resources and system of these resources that aim at monitoring the compliance of their condition with implemented standards". This method includes:

- human resources management strategy,
- actors and organization of process in the field of human resources,
- methods and techniques of human resources management,
- effects of human resources management,
- strategy, structure and organizational culture as factors that determine human resources management,
- the environment of personnel function.

The strategy in question consists in determining the contribution of a personnel unit to the implementation of organization's strategy. While implementing this strategy the organization focuses on undertaking specific actions. All employees must communicate with each other, it is advisable to share knowledge and every single worker is forced to educate and develop.

Personnel controlling is the last the methods mentioned in the study. Controlling means co-creation of plans, procedures and systems of information. It is also a method of management in a company which is orientated towards the future whose main characteristic is anticipation. In an organization controlling is carried out by committees, task forces with flexible composition. The ways the task forces operate are also flexible. Their performance is controlled by a specialist in controlling.

The main features of controlling are:

- coordinating activities,
- supervising work,
- methodical assistance,
- creating interesting solutions,
- inspiring,
- counteracting crisis situations.

It is worth outlining that the personnel controlling in question “constitutes a kind of ‘early warning system’, whose task is to recognize and identify phenomena inside the company and in its environment. It makes it possible to avoid or minimize suddenly emerging threats as well as take advantage of emerging opportunities”.

Personnel controlling can take various forms. The literature lists four basic forms of personnel controlling:

- single employment measure,
- systems of measures selected to monitor strategic goals,
- systems of measures that create cause-effect relations,
- general systems of measuring contribution of work effect to the success of enterprise.

Personnel controlling has one primary goal, which is to increase the effectiveness and efficiency of operations in an enterprise. The tasks of personnel controlling are defined in a passive and active way. Passive tasks of personnel controlling are determined by its role as an early warning system, whereas active tasks of personnel controlling mean optimal use of the opportunities inherent in human capital.

The person responsible for personnel controlling in a company must coordinate the work of a team efficiently, manage the work during implementation of projects, analyze the performance of employees as well as advise the management on possibilities of human capital development.

Summing up, there are a lot of methods of measuring effectiveness. In the literature, researchers indicate the extensiveness of the subject. We can draw a conclusion that numerous methods can be used to measure the effectiveness of organization's activities. The most popular are: strategic scorecard, audit of personnel function and personnel controlling. The effectiveness of organization's activities can also be measured by levels - the level of organization's evaluation, the level of a team evaluation, the level of a workstation evaluation. Indicators of effectiveness of activities can also play an important role in measuring effectiveness.

Skillful use of opportunities brought by the development of new technologies is extremely important, as acquiring new knowledge, creating new value by creating links between people and objects and worlds (real and virtual) is becoming a daily reality for new generations of workers. Modern technologies provide previously unknown possibilities to seek and find effective and efficient solutions to problems in a society, build better living conditions as well as maintain proper economic growth [2].

Table 1 presents a brief overview of stages of Internet development. The five-dimensional management methods create new challenges and change the approach to employees. Companies which manage to change their style of conducting a business from a dimension 4.0 to 5.0 will be more adapted to the specific reality.

Undoubtedly, workers' creativity and imagination should be a key factor to shaping the future [3]. The idea of 5.0 society is not a utopian vision of the future, it is a concept that shows one of the directions in which the richer version of the society is heading.



Table 1 – **Satges of the Internet development**

Stages	Characteristics	Examples of Google apps
Web 1.0	Internet as a collection of websites (electronic library), applications that allow file sharing and messaging; first search engines cataloging websites	Google Search
Web 2.0	Emergence of social media enabling deeper user interaction, evolution from data consumer to data prosumer	Google+ YouTube Maps Android
Web 3.0	Semantic correlation of information generated by prosumers or machines (IoT), evaluation of the usefulness of this information and its representation in the context of various applications	Google Now!
Web 4.0	Network devices use all available information to present it to the user in so-called augmented reality. The development of artificial intelligence and the omnipresence of the Internet allow the creation of "digital assistants"	Google Glass Google Translate AlphaGo
Web 5.0	Further miniaturization and development of the brain-computer interface (brain machine interface) leads to the integration of network devices with the human body, and ultimately to the beginnings of mass cybernetics; parallel development of robotics	Google Contact Lens

Source: [2]

The executives must answer the question: what can new technologies be used for? It can be noted that the latest technological developments, such as: Internet of things (which means that everything will be connected to the Internet), Artificial Intelligence (one of important aspects its adaptability to facilitate peoples' functioning in various dimensions), robotization (involving Artificial Intelligence that can be used not only in cyberspace but in a real world through robots), distributed ledger technology [2].

Society 5.0 will be a 'Society of Imagination'. Therefore, digital technologies and data should be used to create a society where people have a diverse lifestyle and pursue happiness in their own way. In the future people will also need imagination to change the world and creativity to materialize their ideas [2]. The goal, then, is to create a society, where everyone can create values anytime and anywhere in a safe and harmonious environment without any barriers [2].

Therefore, we can think that the improvement of peoples' competencies is reflected in the ability to use this knowledge effectively. It is no longer enough to simply define company's goals and achieve it according to generally accepted rules, it is necessary to apply a new approach to employees' development to make their work ef-

fective under the development of new digital technologies.

Having human capital with the highest qualifications and professional skills forces managers to apply new approaches, such as: problem solving and value creation, diversity, decentralization, resistance, sustainable development and environmental harmony.

Creativity and imagination should be a key factor to shaping the future. Skillful use of opportunities brought by the development of new technologies allows acquiring new knowledge, creating new value by creating links between people and objects and worlds (real and virtual). It provides previously unknown possibilities to seek and find effective and efficient solutions to problems in a society, build better living conditions as well as maintain proper economic growth. However, to make it possible it is necessary to overcome obstacles and barriers.

As shown in Table 1, the reality which is based on constant control and punishing workers is slowly going away. A lot of companies have already adapted the requirements of society 5.0.

Managers are looking for better tools to motivate employees to more effective work and personal development using creativity and ability to cope with stressful situations caused by uncertainty of tomorrow.



Table 2 – Transition to society 5.0

Society 4.0*	Average	Mode	Society 5.0**
economies of scale	4	8	problem solving and value creation
uniformization	7,5	6	diversity
concentration	6	8	decentralization
sensitivity	4,5	7	resistance
high impact on the environment / mass consumption	9	8	sustainable development and environmental harmony

Source: developed on the basis of own research

*1 - society 4.0

**10 - society 5.0

Three main components of society 5.0 such as stability, concentration on development and resilience to shocks, can appear in unpredictable reality causing changes in the environment and forcing employers and employees to find an effective way of conduct.

Conclusions and prospects for further research. The analysis of the research concerning human capital productivity and its transition to 5.0 society entitles to the conclusion that the level of investments in the development of human capital in a company remains on an average level, we can still observe lack of awareness that the increase in investment in human capital is necessary to increase the productivity of human capital which ensures better performance of a company. This is an important challenge for contemporary companies that operate in a new reality.

We may, therefore, presume that in most cases, human capital productivity is mainly connected with the efficiency and productivity of its performance. Knowledge is becoming the basis for identification, development and effectiveness of competences of human capital. Knowledge and information create value which enables an employee to reach an assumed level of effectiveness.

Knowledge update induces changes in the way of thinking. Our world is more and more dependent on digital space and the fifth dimension introduces companies into a sphere that should ensure completing the tasks, minimizing human's effort and facilitating human's work. After implementation of rules of the fourth dimension in a company it is possible to move on to the fifth dimension. Each dimension constitutes the next stage in the development of the relations and interpersonal relations and enables transition to the next dimension.

The considerations presented above emphasize the need to recognize that a lot of companies comply with the requirements of 5.0 society, although the concept of the 5.0 society is not widely known among managers and human resources.

Peace and focus on development should determine the 5.0 dimension. Mental and emotional aspects of human relations fall into and adapt to multidirectional reality in which human capital must possess the appropriate traits that fit a specific reality. However, not every person meets the requirements of the fifth dimension.

Observation of current reality allows us to draw a conclusion that the development of human capital is one of the most important conditions that can lead to growth of effectiveness in employees' performance and company's development. This is particularly important at a current stage of development where the acceleration in scientific and technological progress leads to rapid changes and changes in knowledge and skills.

The issues presented in the article certainly do not exhaust the topic, but it can be a starting point for deeper analysis, and can also be a premise for new scientific challenges. Challenges for further scientific inquiries and identifying new directions for further analytical research which are undoubtedly determined by changes in the current reality.

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