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HUMAN CAPITAL AS A KEY FACTOR IN THE DEVELOPMENT OF UNIVERSITY INNOVATION

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BACKGROUND AND OBJECTIVES. The transition to a digital economy as a vector for the development of multiple social institutions is forced to shift towards multi-dimensional integration. As a consequence, for a modern university, innovative activities are no less important than educational ones. At the same time, the key resource in the process of generating innovative solutions is the human resource. The multidisciplinary orientation of universities allows combining specialists with unique competencies in a single environment, complementing each other and allowing to achieve a synergistic result, and since innovation invariably implies generation of a certain innovation, it is this property of a university that allows us to talk about the presence of a unique innovative potential – human capital

METHODS. The article uses methods of system analysis, scientific analogy and abstraction – to study the category "human capital"; methods of grouping and systematisation – when systemising the main classification features of human capital and factors of influence on its development with account of globalisation trends; statistical analysis – to assess the state of development of human capital at university; indicative methods – when diagnosing human capital development in globalisation conditions; graphic methods – to visualise.

FINDINGS. The following categories were defined: 1) "human capital" as a complex

category, the main component of which is the development of non-standard human thinking, capable of self-organization, renewal, self-perfection and acts as an intellectual, creative factor and a key resource in building a socio-innovative model of economic development; 2) "innovative human capital of the university in conditions of globalization" which is viewed from an integrated approach, with the main emphasis on self-perfection, self-actualization of the human capital of the university; 3) "innovation human capital of the university" which is viewed from an integrated approach.

CONCLUSION. The development of human capital as the main condition for the formation of the structure of economy of innovative type, based on information and intellectual production technologies, causes the need to reform and improve the systemic state policy, focused on providing the basic conditions for comprehensive human development. It is the active impact of the state in complex economic conditions to increase the efficiency of human capital development both at the macro level (economy as a whole) and at the micro level (university) that will improve the economic situation in the country and enhance the competitiveness of the national economy in the global world.

KEYWORDS: human capital; university; research and development work.

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ЛЮДСЬКИЙ КАПІТАЛ ЯК КЛЮЧОВИЙ ФАКТОР РОЗВИТКУ ІННОВАЦІЙНОЇ ДІЯЛЬНОСТІ УНІВЕРСИТЕТІВ

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ПОСТАНОВКА ПРОБЛЕМИ ТА ЗАВДАННЯ. Перехід до цифрової економіки як вектор розвитку безлічі громадських інститутів вимушено зміщується в бік багатовимірної інтеграції. Внаслідок цього, для сучасно університету інноваційна діяльність стає не менш значущою, ніж освітня. При цьому ключовим ресурсом в рамках процесу генерації інноваційних рішень є людський ресурс. Багатопрофільна спрямованість університетів дозволяє в єдиному середовищі об'єднувати фахівців, що володіють унікальними компетенціями, які доповнюють один одного і дозволяють досягти синергетичного результату, а так як інновація незмінно має на увазі генерацію певного нововведення, то саме ця властивість університету дозволяє говорити про наявність унікального інноваційного потенціалу – людського капіталу.

МЕТОДИ. Використано методи системного аналізу, наукової аналогії і абстракції – для дослідження категорії «людський капітал»; методи групування і систематизації – при систематизації основних класифікаційних ознак людського капіталу та факторів впливу на його розвиток з урахуванням тенденцій глобалізації; статистичний аналіз – для оцінки стану розвитку людського капіталу університету; індикативні методи – при діагностуванні розвитку людського капіталу в умовах глобалізації; графічний – для наочного відображення матеріалу; абстрактно-логічний метод – для формулювання висновків і теоретичного узагальнення результатів.

РЕЗУЛЬТАТИ. Визначено категорії 1) «людський капітал» як комплексна категорія, головною компонентою якої є розвиток нестандартного мислення людини, здатного до самоорганізації, поновлення, самовдосконалення і виступає інтелектуальним, творчим чинником і ключовим ресурсом побудови соціально-інноваційний моделі розвитку економіки; 2) «інноваційний людський капітал університету в умовах глобалізації», яка розглядається з позиції інтегрованого підходу, де головний акцент на самовдосконаленні, самореалізації та інноваційної праці, тим самим підвищує рівень конкурентоспроможності університету в умовах розвитку інноваційно-інформаційної економіки і створює цінності в глобальній економічній системі.

ВИСНОВКИ. Розвиток людського капіталу як головної умови формування структури економіки інноваційного типу, заснованої на інформаційних та інтелектуальних технологіях виробництва, викликає необхідність проведення реформування і вдосконалення системної державної політики, орієнтованої на забезпечення базових умов для всебічного розвитку людини. Саме активний вплив держави в складних економічних умовах підвищення ефективності розвитку людського капіталу як на макрорівні (економіки в цілому), так і на мікрорівні (університету) сприятиме поліпшенню економічної ситуації в країні і підвищенню конкурентоспроможності національної економіки в глобальному світі.

КЛЮЧОВІ СЛОВА: людський капітал; університет; науково-дослідні та дослідно-конструкторські роботи.

INTRODUCTION.

The modern theory of human capital as a separate scientific direction began to form in the second half of the twentieth century, and the following new socio-economic conditions of economic management contributed to it (AzmuK, 2014): considerable theoretical and methodological material in the form of human capital concepts in world science was accumulated, which gave prerequisites for the emergence of a new scientific direction – human capital theory (Amosov et al., 2011); new and accelerated existing processes of humanization of socio-economic A specific feature of today's global economy is the widespread use of universities as drivers of innovative development (Andreychikov, 2010). The higher education system is the foundation for building up and using the country's intellectual potential. A competitive system of this reproduction based on intellectual capital is necessary for effective reproduction of highly qualified personnel (Voloshina, 2014). Intellectual capital, which includes knowledge, professional experience, competences, and reputation level, plays a particularly significant role in developed countries. The development and accretion of this capital has largely predetermined the formation of the most influential and economically powerful countries of the current era (Gvozdu, 2012). Intellectual capital is a form of fixation, preservation, accumulation, development of human experience: its basis is the "objectification" of human qualities and forces in the form of means of activity and cooperation of people, as well as in the form of a system of things, which conditions the reproduction of social life (Gorban et al., 2013); Some scholars define types of human capital in accordance with the types of investment in it. Thus, L. Golovko notes that human abilities can be developed through specific activities that have investment parameters (Golovko, 2014). Investment activities aimed at creating certain groups of human capabilities that have a capital base and are used as human capital are singled out: pre-school and school education and upbringing; higher education; training; professional development and retraining at work; health promotion; development of intellectual abilities; assimilation of volumes of necessary information in economic activity (Andreychikov, 2010). Particular attention is paid to higher education. In terms of perspective, new trajectories, vectors set by universities in the conditions of modern challenges become not just pointers, but also markers, locomotives for development, the consequence of movement along which will be the increase of intellectual capital. Against the background of increasing competition from comfort and stability through virtualization of everything possible, departure to social networks, the value of ideas, innovation in the broadest sense is increasing exponentially over time. Consequently, the question of personification of support of person's innovative potential from centres of development of innovative activity of youth to realization of own innovative project, which is the author's definition of the term "individual

trajectory", is especially acute. A great deal of research has been devoted to the development and improvement of individual trajectories of human innovative development, but in this study, it was necessary to highlight the following principle innovations that are eventually accumulated in the prepared and implemented innovative projects.

The purpose of the study is to substantiate the role of human capital as a key factor in the development of innovative activities of universities. The study was conducted in 2020 on the basis of data from Kyiv National University of Technologies and Design (Ukraine).

MATERIALS AND METHODS.

Theoretical and methodological basis is provided by fundamental provisions of economic theory, modern concepts of systems and management theory, methodology of state regulation of human capital development and scientific achievements of scientists on the effective reproduction of human capital and problems of economy and national economy management. In order to achieve the set goal and solve the set tasks, a set of principles, methods of scientific knowledge, general theoretical, special and interdisciplinary methods of scientific research, namely: system analysis, scientific analogy and abstraction – to deepen the definition of the essence of such conceptual categories as "human capital", "investment in human capital"; functional system method – when analyzing domestic and foreign experience of human capital development, to build the system of indicators.

RESULTS AND DISCUSSION.

The university is a kind of foundation for the development of intellectual capital. The university intellectual capital is used by the economic actors at the output and is a key factor that determines the competitiveness of the country's economy. Table 1 shows a diagram of the components of university intellectual capital.

The development of intellectual capital in foreign practice is directly linked to state support for research and innovation activities in HEIs, in particular R&D funding. R&D is the most significant part of intellectual capital. Thus, through public or private funding of R&D, it is possible to directly influence the development of intellectual capital in higher education institutions. The development of intellectual capital in developed foreign countries, although there is a difference in approach, is done precisely through R&D funding, either indirectly or directly. In the UK, funding of intellectual capital is done in a "dual support" format. On the one hand, the government gives one-off subsidies, on the other hand, university innovation departments fund research councils, which then also invest in R&D on a project basis. The experience of intellectual capital development in continental Europe can be considered on the example of Norway. All Norwegian universities in carrying out research and training of

scientific personnel must use the work of their graduates and doctoral students. The specificity is that conducting basic research is not the final goal: Norwegian universities need to achieve commercial use of the results of their inventions. Thus, the development of intellectual capital in developed countries is directly linked to the financing of R&D and its further commercialisation. The state plays a central role in funding universities and, accordingly, has the main leverage on the development of intellectual capital in them. In addition to the state, universities are also financed by private firms, which are interested in using the results of research activities of universities, usually in order to gain a competitive advantage or to improve their business processes. Table 2 shows the countries with the highest levels of investment in R&D.

Table 1

University intellectual capital scheme

University intellectual capital		
Market capital	Organisational capital	Human capital
Consumer base of educational services (capacity of consumers, their loyalty, development of relations with consumers (participation in product and technology development), standards of work with consumers of educational services)	Mission, vision, goals, management paradigm	Personality traits and psychophysiological characteristics
Reputation/image of the educational institution (fulfilment of obligations, relationships with suppliers, competitors, other stakeholders)	Level of strategic management Key competences and their development	Motivational characteristics Value orientations
Uniqueness of educational products, technologies, services (patent/authorship rights to intellectual property)	R&D and its impact	Universal competences (capacity for self-learning)
Business process methods, models and technologies used in the organisation	Level of financial management	Corporate competences (including knowledge management competences)
Organisational culture (moral values, work culture, general approach to business, attitude towards change)	Level of communication management Human resource management system	The competencies of the post
Strategic partners, effectiveness of stakeholder engagement	Level of project management Organisational structure	Skills

Source: Nikiforova, 2010.

Table 2

Top 10 countries with the most investment in R&D

Country	2018			2019		
	GDP, \$ billion	R&D, \$ billion	Share of R&D in GDP, %	GDP, \$ billion	R&D, \$ billion	Share of R&D in GDP, %
1. USA	19921,0	565,76	2,84 %	20458,9	581,03	2,84 %
2. China	24646,0	485,53	1,97 %	26223,3	519,22	1,98 %
3. Japan	5469,9	191,45	3,50 %	5519,1	193,17	3,50 %
4. Germany	4253,8	120,81	2,84 %	4338,9	123,22	2,84 %
5. India	10146,1	86,24	0,85 %	10937,5	94,06	0,86 %
6. South Korea	2087,8	90,19	4,32 %	2148,4	93,46	4,35 %
7. France	2885,4	64,92	2,25 %	2943,1	66,22	2,25 %
8. Russia	4068,0	61,83	1,52 %	4129,0	61,94	1,50 %
9. Great Britain	2926,1	50,33	1,72 %	2970,0	51,38	1,73 %
10. Brazil	3293,0	38,53	1,17 %	3375,3	39,15	1,16 %

Source: Pisarenko, 2019.

Ukrainian investment in R&D in 2019, according to the Global R&D Funding forecast 2019, was projected at 61.94 bn dollars, which would amount to 1.5% of GDP. Ukraine is not among the largest investors in terms of the share of R&D spending in GDP. The average R&D expenditure in developed countries is approximately 3% of GDP. The concept for long-term socio-economic development of Ukraine until 2025 envisages that R&D expenditure should increase to 2.5–3% of GDP by 2025, but compared to 2018, the share of investment in R&D to GDP has decreased by 0.02 p.p. Thus, it seems unlikely that an R&D investment level of 2.5% of GDP will be achieved by 2025. In addition to the Global Innovation Index, countries are ranked according to the Innovation Performance Index, which characterises the creation of favourable conditions for innovation performance. On this indicator, Ukraine is in 5th place in 2018, 6 positions higher than in 2017 (Table 3). This indicates an increase in the efficiency of innovation activity in the country.

Undoubtedly, the stagnation of the Ukrainian economy has had a negative impact on the possibility of reaching the level of developed countries in terms of R&D investment. Overcoming stagnation requires modernization of the Ukrainian economy, but the foundation of modernization is largely based on the scientific potential generated by investment in R&D. Hence, a major reorientation of the state budget towards scientific development by cutting expenditures in the least priority areas is required. The most important event in the transformational development of higher education in Ukraine came in 2003, when the state signed the Bologna Declaration. This act is based on the rapprochement and unification of different educational systems to create a single educational space for different states. With the signing of the declaration, higher education policy was oriented to the following objectives: the organization of

the domestic education system at the first stage of two-stage educational programmes (bachelor and master), and then the establishment of three-stage programmes – postgraduate studies; transition to new educational standards; development of new educational programmes; the introduction of comparable qualifications and competences; organization of defence of graduate qualifications instead of diplomas; use of point-rating systems Of course, the link between intangible assets and sustainable growth is objective and has classical examples. In Brazil, for example, intangible assets are becoming a key success factor for sustainable growth, increasing the surplus value of the intellectual capital of educational institutions (Fernandez, 2012). Modern challenges shape new trajectories, the vectors set by universities become not just signposts for people, but also markers, locomotives for development. A consequence of moving along the trajectory of development will be an increase in intellectual capital. Against the background of increasing competition from comfort and stability through the virtualisation of everything possible, the departure to social networks, the value of creations in the broadest sense is increasing exponentially over time.

Table 3

Trends in some countries' rankings on the Innovation Performance Index from 2010 to 2018

Country	Rating according to the Innovation Efficiency Index						
	2010	2012	2014	2015	2016	2017	2018
Ukraine	54	14	14	15	12	11	5
RF	30	43	49	60	69	75	77
Kazakhstan	77	131	118	124	108	116	111
China	14	1	2	6	7	3	3
USA	63	70	57	33	25	21	22
Germany	56	11	19	13	9	7	9
Poland	85	80	76	93	66	48	42
India	101	2	31	31	63	53	49
Japan	18	88	88	78	65	49	44
Switzerland	15	5	6	2	5	2	1
Luxembourg	5	8	9	3	1	1	2

Source: The Global Innovation Index 2010–2018 URL: <http://www.globalinnovationindex.org>.

CONCLUSION.

The development of intellectual capital in universities is an investment in the future of the country and society. R&D funding is a crucial determinant of intellectual capital development, so we face a difficult choice between a conservative approach to R&D investment and an increase in R&D expenditure to the level of developed countries, which would require a significant financial injection from the state at the expense of other state budget expenditure items. But only the development of an innovation economy based on knowledge-

intensive industry can give Ukraine a chance to join the cohort of developed countries, so conservatism is inappropriate.

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ABBREVIATIONS:

%	Percentage
GDP	Gross domestic product
HEI	Institutions of higher education
R&D	Research and development work

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