

UDC 339.166.5:378.015.311

JEL Classification: I20, D83, M12, M14, M30, O15, O33

*Illiashenko Sergii^{a, b}, Shypulina Yuliia^a, Illiashenko Nataliia^{c, d}, Golysheva Ievgeniia^{d, e}***INTELLECTUAL CAPITAL MANAGEMENT OF THE UNIVERSITY IN THE SYSTEM OF ITS INNOVATIVE DEVELOPMENT**^a National Technical University “Kharkiv Polytechnic Institute”, Kharkiv, Ukraine^b University of Economics and Humanities, Bielsko-Biala, Poland^c Sumy State Pedagogical University named after A. S. Makarenka, Sumy, Ukraine^d Sumy National Agricultural University, Sumy, Ukraine^e Wroclaw University of Science and Technology, Wroclaw, Poland

The article is devoted to the development of an approach to integrated adaptive management of intellectual capital of a modern university (including individual subsystems and their elements) in the system of its innovative development in the changing technological environment and the fourth industrial revolution. The sequence and content of formalized management procedures are determined, including the determination of perspective strategic directions of scientific and educational activity of the university in the conditions of technological transformations caused by the fourth industrial revolution; assessments of the proposed methodological approach to the level of the current state of subsystems and elements of intellectual capital from the standpoint of sufficiency to ensure the innovative development of the university in selected areas; decision-making on the management of intellectual capital of the university, including its subsystems and their elements, based on the results of the assessment of their sufficiency. The conceptual scheme of adaptive management of university intellectual capital in the conditions of technological transformations in the system of its innovative development is developed. The scientific results obtained in the article deepen the principles of innovative management of scientific and educational institutions in terms of forming an approach to adaptive integrated management of university intellectual capital, as one of the main prerequisites for their innovative development in the transformation of technological systems and the fourth industrial revolution. The practical implementation of these developments will significantly increase the efficiency of management of the formation, actualization, strengthening, and use of intellectual capital of universities, to form on this basis the prerequisites for their innovative development, strengthen positions in world rankings. It will also contribute to the development of the market infrastructure of scientific and educational services and the innovation infrastructure of the state as a whole, which is especially relevant for Ukraine.

Keywords: university intellectual capital, strategic management, formalized management procedures, innovative development, market of scientific and educational services, fourth industrial revolution, transformation of technological systems.

DOI: 10.32434/2415-3974-2022-15-1-74-83

Introduction and problem statement

World practice convincingly shows that in modern conditions of technological system

transformation the ability to produce and use new knowledge becomes the main factor in the competitiveness of individual enterprises and

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Illiashenko S., Shypulina Yu., Illiashenko N., Golysheva Ie.

institutions and national economies as a whole. In these conditions, the role of universities as research and educational institutions, which are important elements of the infrastructure of the market of scientific and educational services and at the same time - innovation infrastructure, is growing rapidly. On the one hand, they produce new knowledge that develops the principles of various branches of science, embodied in innovative developments: product, technological, managerial, educational, social, and more. On the other hand, they train highly qualified specialists capable of creating, perceiving, and using new relevant knowledge. Permanent changes in environmental conditions caused by the fourth industrial revolution and the transformation of technological systems, initiate adjustments in the direction of research, methods, and technologies of the educational process, the range of specialties, and more. This requires the formation of strategies for innovative development of universities, which not only ensure the adaptation of scientific and educational activities to changes in environmental conditions, but also enable the programming of these changes. The main prerequisite for the success of strategies for innovative development of universities in the context of technological transformation is the presence of powerful intellectual capital and an effective management system for its formation, growth, and use. At the same time, the transformation processes initiated by the fourth industrial revolution in almost all spheres of human activity require constant updating of the intellectual capital of universities. Accordingly, there is a problem with forming an adaptive system of strategic management of actualization and use of intellectual capital of universities as the basis of their innovative development, which in turn will contribute to the socio-economic growth of Ukraine.

Analysis of recent research and publications

Issues of identity analysis of universities' intellectual capital and the development of approaches to its management have been studied in the works of domestic and foreign scientists. Thus, Skiba Yu. [1] should be singled out among domestic authors, who consider the concept of «scientific and pedagogical potential» related to intellectual capital, but this is only part of the university's intellectual capital. Shestakovska T.L., Yarovoi T.S. [2] analyze the world experience of intellectual capital management of the country as a whole and based on its generalization offer a system of measures that are suitable for the conditions of Ukraine. The intellectual capital of universities is considered by them only indirectly from the standpoint of certain

aspects of the education system and science of the country as a whole. Nykonchuk V.M. [3] offers general aspects of the approach to the formation of the mechanism of intellectual capital management, which combines individual elements of management at the macro and micro levels, as well as the level of an individual organization. However, it needs to specify the forms and methods of management, including the specifics of the organization, as well as existing in the field of its functioning management mechanisms. Kasych A. et al. in [4] argue that the effective management of intellectual capital of higher education institutions largely determines the level of their economic security.

Problems of analysis and management of intellectual capital are relevant in the works of foreign scholars. Quintero-Quintero W. et al. [5] conducted a bibliometric analysis of publications in the Scopus indexing database to identify the relevance of research on various aspects of organizations' intellectual capital. Their results show that the intellectual capital of organizations has been important and relevant in scientific publications over the last six years. Gueye M. and Exposito E. [6] proposed a new concept of the university, which is based on the conceptual foundations of the fourth industrial revolution. It provides for the integration into a united system of teachers and students of the university, digital technology, learning processes, etc. (by analogy with industrial production). This will allow the introduction of modern digital pedagogical innovations, improve the quality of the educational process, and adapt it to the conditions of the fourth industrial revolution. The creation of such systems is possible in universities with strong intellectual capital. Cricelli L. et al. [7] investigated the relationship between intellectual capital and the performance of public universities in developing countries. A model is proposed that determines the relationship between the level of the intellectual capital of the university and its ability to conduct research, produce innovative developments, improve methods and technologies of educational activities, and more. Ihyaul U. et al. [8] investigated the degree of disclosure for a wide range of intellectual capital indicators of 30 Indonesian universities, present on the Internet. The significant influence of the degree of disclosure of intellectual capital of universities on the interest of potential students in them is determined. Elwaakeel F.R. and El-Khweet S. [9] study the management practices of the intellectual capital components of Egyptian public universities. They highlight the main problems of the management system that prevent Egyptian universities from

achieving high positions in world rankings. Ramirez Y. et al. [10] based on research conducted in public universities in Spain offer a new approach to measuring their intellectual capital, which will increase the efficiency of its management. Todericiu R. and Șerban A. [11] investigated the role of intellectual capital in modern organizations, in particular, in universities. The results of the study confirm the high relevance of intellectual capital management of universities to ensure their competitiveness in the market for scientific and educational services.

The results of the analysis of literature sources show that, despite significant developments, the issues of intellectual capital management of universities in the conditions of technological transformations of the modern economy remain insufficiently disclosed. Existing publications reveal some aspects of the researched problem, which does not allow for effectively managing the intellectual capital of universities in the conditions of permanent changes in the external macro- and micro-environment, which are caused by technological transformations.

The purpose of the article

The article aims to develop the principles of integrated adaptive management of intellectual capital of modern university, including its subsystems and their elements, in the context of its innovative development in a changing technological environment and the fourth industrial revolution.

The main material

The development of a management system involves detailing the object of management - intellectual capital, which is a complex system. The intellectual capital of the university is considered as a set of its intellectual resources and abilities (potential) of their realization, which determines the ability to produce, perceive, update and use new knowledge, embody it in innovative products of scientific and educational activities, form and implement strategies for sustainable innovation in the market of scientific and educational services. It includes [12] three components of the subsystem in each of which the resource and ability (ability to realize available resources) parts are distinguished: human (personal) capital; organizational (structural) capital, interface capital (communications capital).

Based on the results of the identity analysis of the university's intellectual capital, as well as the impact analysis of the Fourth Industrial Revolution on all spheres of human activity [13], including science and education and the labor market. Execution of each subsequent task involves taking into account the results of the previous ones.

1. Determining the strategic directions of scientific and educational activities of the university in the fourth industrial revolution and changes in technological systems. Provides for the use of marketing methods and tools that solve the following sequence of tasks:

1.1. Allocation of priority areas of research and development work (R&D) of the university. Performed based on the analysis of the state and trends of science and technology by the profile of the university.

1.2. Identification of labor market development trends. It is based on the results of the analysis of the state and trends of technical and technological development in the fields of traditional employment of university graduates, as well as in related fields .

1.3. Identification of current areas, specialties and specializations of training. Carried out based on the results of the analysis of the state and trends of labor markets.

1.4. Identification of promising target markets, clarification of the nomenclature of specialties, forms and methods of educational activities. Carried out based on the results of analysis of the state and trends in the markets of scientific and educational services, market positions of the analyzed university, its competitiveness and more.

The implementation of this group of tasks allows to outline the strategic direction of updating the subsystems and elements of intellectual capital of the university to bring their state in line with the conditions of the external micro- and macro-environment.

2. Assessment of the current state of intellectual capital of the university from the standpoint of ensuring its innovative development by the selected strategic directions of scientific and educational activities in the fourth industrial revolution and changes in technological systems.

2.1. The approximate composition of the evaluation indicators is given in Table. 1. They may be supplemented by other indicators used in international and national university rankings.

2.2. The following approach is proposed for evaluation. According to the proposed Table 1 indicators assess the individual elements of the subsystems of intellectual capital: resource part; ability part. It is suggested to use the formula to normalize the estimates

$$O_n = \frac{(O_a - O_{\min})}{(O_{\max} - O_{\min})},$$

Table 1

Indicators for assessing the state of the elements of the subsystems of the university’s intellectual capital

Susystems	Resource part	Able part
Human (personal) capital	Share of scientific and educational potential: with scientific degrees and academic titles; with experience of teaching and internship abroad; with experience of practical work in the field of educational activities in Ukraine/abroad; members of domestic and foreign trade unions and associations; winners of prestigious awards and titles. Staff structure: by age; experience; gender, etc. Teachers' assessments based on the results of student surveys, etc.	Volumes and types of R&D (state budget, economic contracts, foreign grants, etc.). Citation indexes (Scopus, Web of Science, etc.) of staff research papers. Courses of disciplines relevant in the conditions of the fourth industrial revolution are developed. Defense of dissertations PhD, doctor of sciences. Membership in special councils, opposition. Membership in the editorial boards of peer-reviewed domestic and foreign professional periodicals indexed by Scopus, Web of Science, etc. Participation in prestigious domestic and foreign scientific conferences, competitions, rankings, etc. Number of prize places of students at Olympiads and scientific competitions of national and international levels. Participation of scientific and pedagogical workers in conducting licensing and accreditation examinations, etc. Participation in the examination of international scientific and educational, etc. projects.
Organizational (structural) capital	Modern laboratory and educational base of the university: devices, equipment, tooling, etc. University periodicals indexed in Scopus, Web of Science, etc. Regular publication of scientific monographs on current areas of research, including collective with the involvement of foreign scholars. Special councils for the defense of dissertations PhD, doctor of sciences in specialties corresponding to the profile of the university. Methodical equipment (level of provision) of the disciplines of training relevant in the period of technological transformations (textbooks, manuals, methodical instructions, etc.): general / own development. Access through electronic communication systems to leading domestic and foreign libraries, etc. Patent activity, developed and legally protected intellectual property. The level of use of modern information and communication technologies (ICT), including generated by the fourth industrial revolution. Progressive organizational structures of departments and the university as a whole. Innovative type of organizational culture of staff.	High impact factor of scientific periodicals of the university. Prestigious awards of monographic and educational-methodical (textbooks, manuals) publications of the university. Carrying out of prestigious domestic/international scientific (scientific-practical) and methodical conferences based on the university. Conducting subject Olympiads and competitions of students' scientific works based on the university, etc. international. Completeness of presentation of works of scientific and pedagogical staff and students in the repository. Completeness of providing academic disciplines with electronic textbooks, lecture notes, etc. methodical materials. Proportion of students majoring in the digital economy. The speed of response to trends in the market of scientific and educational services, generated by the fourth industrial revolution and the transformation of technological systems. Part of training specialties accredited according to international standards. Availability of certified laboratories conducting examinations commissioned by third-party organizations.
Interface capital (communications capital)	Stable contacts with schools, etc. educational institutions that prepare potential entrants. Stable contacts (informal or formal) with employers, partner universities, research organizations, etc. (including foreign ones). Joint implementation of projects by other organizations: scientific, educational, publishing, etc. Regular events aimed at potential entrants and students: thematic competitions, such as "find yourself in the name of the specialty", demonstration of interesting scientific and technical developments, days of institutes (faculties), departments with the invitation of schoolchildren, college students and more. Conducting sports, scientific, technical, artistic, etc. circles for potential entrants.	The positive image of the university and its modern relevant specialties in the labor market is perceived by: students; entrants and persons influencing their choice; colleagues from other universities, etc. economic contractors, and contact audiences, including foreign. Competitive indicators and indicators of the number of students, including foreign. Availability of students from economically developed countries. Invitations to other scientific and educational institutions, including foreign to implement research and educational projects. Concluding agreements with employers for research and targeted training. Invitation of employers of students and graduates to work.

Source: built by authors with using data [11]

where O_n – normalized evaluation of the element; O_{\min} , O_{\max} – respectively, the minimum and maximum assessment of the element from all comparable universities operating in the target market (its segment or niche); O_a – actual assessment of the element of the university under analysis. Indicator It can take the value 0–1.

It should be noted that in the absence of data from universities compared with the analyzed, the assessment O_n can be determined expertly using the Harrington verbal-numerical scale [14]: $0 \leq O_n < 0.2$ – very low level; $0.2 \leq O_n < 0.37$ – low level; $0.37 \leq O_n < 0.63$ – medium level; $0.63 \leq O_n < 0.8$ – high level; $0.8 \leq O_n \leq 1.0$ – very high level.

Estimation of components of subsystems of intellectual capital is calculated as the arithmetic mean of estimates of their elements (see Table 1). Based on the results of the assessments, a decision is made on the level of the relevant component (using the above Harrington scale).

3. Making decisions on intellectual capital management of the university based on the evaluation of its intellectual capital (see paragraph 2 above). Relevant recommendations are given in Table 2. Designation in Table 2: HC, OC, IC – accordingly,

human, organizational, interface capitals-subsystems of intellectual capital of the university. The Table is intended for the analysis of the options of innovative development of university in the market of scientific and educational services chosen at the first stage (see above tasks of items 1.1–1.4). Thus in Table 2 takes into account the estimates of the components of intellectual capital of the university, calculated in paragraph 2 according to the proposed method. Such assessments are performed for each of the possible options for innovative development of the university.

In fact, the set of estimates of resource and capacity components of intellectual capital subsystems, analyzed in Table 2, indicates the sufficiency or insufficiency of their level for the implementation of selected options for innovative development of the university, for example: actualization of research areas; conducting educational activities in new relevant specialties; introduction of new methods and forms of educational activity; development of new markets for scientific and educational services, etc.

From Table 2 it is followed that the ability to realize available intellectual capital has advantages over its resource component. Practice shows that

Table 2

Table of decisions on intellectual capital management of the university

Resource	Ability to implement	Risk level	Decision
HC, OC, IC – very high level	HC, OC, IC – very high level	Almost no risk	The chosen development option can probably be implemented
HC, OC, IC – high level	HC, OC, IC – very high level	Almost no risk	The chosen development option can probably be implemented
HC, OC, IC – very high level	HC, OC, IC – high level	Minimal risk	The chosen development option can almost certainly be implemented
HC, OC, IC – high level	HC, OC, IC – high level	Minimal risk	The chosen development option can almost certainly be implemented
HC, OC, IC – high level	HC, OC, IC – medium level	Increased risk	The chosen development option can probably be implemented
HC, OC, IC – medium level	HC, OC, IC – high level	Minimal risk	The selected development option is likely to be implemented
HC, OC, IC – medium level	HC, OC, IC – medium level	Increased risk	The chosen development option can probably be implemented
The level of one or more capitals (HC, OC, IC) is low	HC, OC, IC – high / very high level	Increased risk	The chosen option of development is problematic, to consider the possibility of strengthening the ability part
The level of one or more capitals (HC, OC, IC) is low	HC, OC, IC – medium level	High risk	The chosen option of development is problematic, to consider the possibility of strengthening the ability part
HC, OC, IC – high / very high level	The level of one or more capitals (HC, OC, IC) is low	High risk	The chosen option of development is problematic, to consider the possibility of strengthening the ability part
HC, OC, IC – medium or low level	The level of one or more capitals (HC, OC, IC) is low	Unacceptable risk	Option cannot be implemented. Alternatives should be considered

Source: developed by the authors

the ability to effectively use a limited number of resources is more important than the inefficient use of a large resource base. This is true for the system of science and education, in particular universities.

4. Carrying out activities for intellectual capital management of the university. From Table 2 it is followed that the measures for intellectual capital management of the university can be grouped as follows:

- maintenance at the existing level – in the case of implementation of areas of innovative development: without risk, with minimal risk (adequacy of the level of intellectual capital). Development and implementation of the strategy of innovative scientific and educational development of the university;

- actualization and strengthening – in case of realization of options of innovative development with the increased risk (incomplete sufficiency);

- significant strengthening – in the case of implementing options for high-risk innovation development (significant failure);

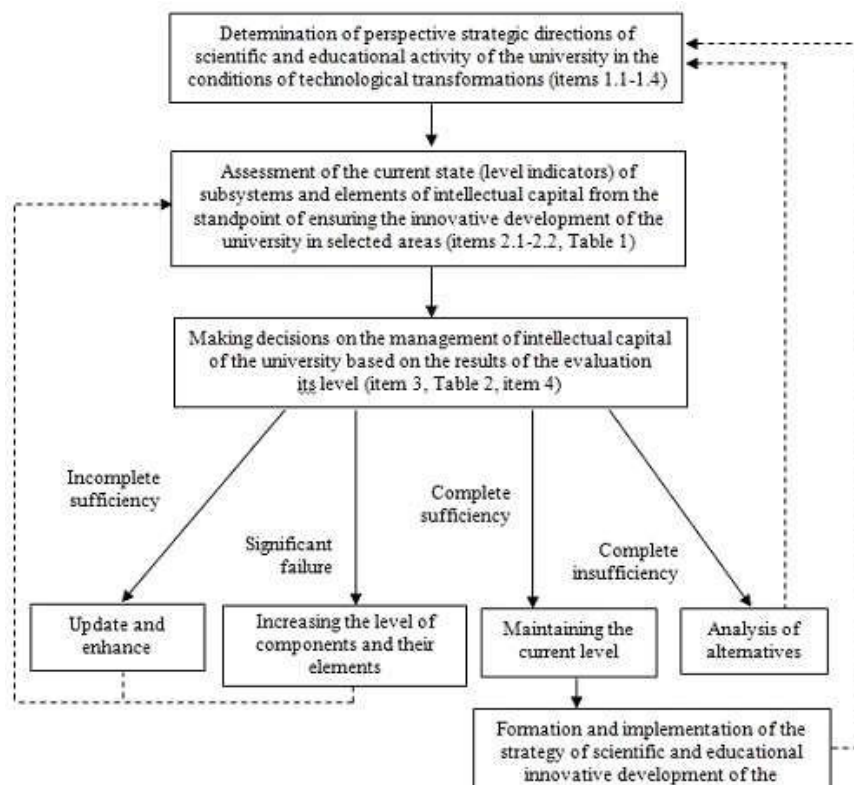
- re-analysis of sufficiency for alternative development options (the level is clearly insufficient).

Which components of the university’s intellectual capital, their parts and elements it should

be paid attention to (to strengthen or update them) – decide on the results of assessing their level and taking into account Table 2. Representations of the composition of the elements of resource and ability parts of the constituent subsystems of the university’s intellectual capital give the indicators presented in Table 1. Given the results of the literature sources analysis, it is necessary to positively present the indicators of university’s intellectual capital on the Internet (at least – on the university website; preferably - on the sites of related associations and unions, reference sites, media, etc.). This, according to world practice, has a positive effect on economic contractors and contact audiences of the university, contributes to the formation of its positive image, and in the long run – the brand [15].

Among the instrumental support of intellectual capital management system of the university should be distinguished methods and tools:

- marketing of knowledge, marketing of innovations, marketing of personnel – to determine the areas of actualization and alignment of capital components and their elements to the conditions of the external macro- and micro-environment in the selected target markets of scientific and educational services;



Scheme of adaptive management of university’s intellectual capital in the system of its innovative development
Source: authors’ development

– personnel management – for human capital management;

– innovation management, marketing of innovations – for the management of organizational capital, the capable part of human capital, the formation and development of innovation culture;

– partnership marketing, image building - for interface capital management, etc.

Summarizing the above, the enlarged scheme of adaptive management of intellectual capital of the university in the context of ensuring its innovative development is proposed (Figure). Feedback is given by dotted lines.

The proposed scheme reflects the main stages of management of formalized procedures of the university's intellectual capital from the standpoint of providing conditions for its innovative development in terms of changes in the external macro- and micro-environment caused by the fourth industrial revolution.

Conclusions

The principles of complex adaptive management of intellectual capital of modern university, including its separate subsystems and their elements, in the system of its innovative scientific and educational development in the conditions of change of technological ways and the fourth industrial revolution, are developed. The sequence and content of management procedures are determined, in particular: determination of perspective strategic directions of scientific and educational activity of the university in the conditions of technological transformations caused by the fourth industrial revolution; assessment of the proposed approach to the level of the current state of subsystems and elements of intellectual capital from the standpoint of sufficiency to ensure the innovative development of the university in selected areas; decision-making on the management of intellectual capital of the university, including its subsystems and their elements, based on the results of the assessment of their sufficiency. The generalized scheme of adaptive management of the university's intellectual capital in the system of its innovative development is developed.

The obtained scientific results deepen the principles of innovative management of scientific and educational institutions in terms of forming an approach to adaptive integrated management of universities' intellectual capital, as one of the main prerequisites for their innovative development in the transformation of technological systems and the fourth industrial revolution. Their practical implementation will increase the efficiency of

managing the processes of formation, actualization, strengthening, and use of intellectual capital of universities, form on this basis the prerequisites for their innovative development, strengthen positions in world rankings. In turn, this will contribute to the development of the infrastructure of the market of scientific and educational services and the innovation infrastructure of the state as a whole.

Further research should be aimed at forming the foundations of the organizational and economic mechanism of integrated management of intellectual capital of the university in the context of its innovative development in the fourth industrial revolution.

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УПРАВЛІННЯ ІНТЕЛЕКТУАЛЬНИМ КАПІТАЛОМ УНІВЕРСИТЕТУ В СИСТЕМІ ЙОГО ІННОВАЦІЙНОГО РОЗВИТКУ

Ілляшенко С.М., Шипуліна Ю.С., Ілляшенко Н.С., Голишева Є.О.

Статтю присвячено розробленню підходу до комплексного адаптивного управління інтелектуальним капіталом сучасного університету (у т.ч. окремими підсистемами та їх елементами) в системі його інноваційного розвитку в умовах зміни технологічних укладів і четвертої промислової революції. Визначено послідовність і зміст формалізованих процедур управління у т.ч.: визначення перспективних стратегічних напрямів науково-освітньої діяльності університету в умовах технологічних трансформацій, спричинених четвертою промисловою революцією; оцінювання за запропонованим методичним підходом показників рівня поточного стану підсистем і елементів інтелектуального капіталу з позицій достатності для забезпечення інноваційного розвитку університету за вибраними напрямками; прийняття рішень з управління інтелектуальним капіталом університету, включаючи його підсистеми і їх елементи, за результатами оцінювання їх достатності. Розроблена концептуальна схема адаптивного управління інтелектуальним капіталом університету в умовах технологічних трансформацій в системі його інноваційного розвитку. Отримані у статті наукові результати поглиблюють засади інноваційного менеджменту науково-освітніх установ в частині формування підходу до адаптивного комплексного управління інтелектуальним капіталом університетів, як однією з головних передумов їх інноваційного розвитку в умовах трансформації технологічних укладів і четвертої промислової революції. Практична реалізація зазначених розробок дозволить суттєво підвищити ефективність управління процесами формування, актуалізації, посилення і використання інтелектуального капіталу університетів, формувати на цій основі передумови їх інноваційного розвитку, посилювати позиції у світових рейтингах. Вона також сприятиме розвитку інфраструктури ринку науково-освітніх послуг і інноваційної інфраструктури держави у цілому, що є особливо актуальним для України.

Ключові слова: інтелектуальний капітал університету, стратегічне управління, формалізовані процедури управління, інноваційний розвиток, ринок науково-освітніх послуг, четверта промислова революція, трансформація технологічних укладів.

Received 06.04.2022.

**УПРАВЛЕНИЕ ИНТЕЛЛЕКТУАЛЬНЫМ КАПИТАЛОМ
УНИВЕРСИТЕТА В СИСТЕМЕ ЕГО
ИННОВАЦИОННОГО РАЗВИТИЯ***Ильяшенко С.Н., Шупулина Ю.С., Ильяшенко Н.С.,
Гольшева Е.А.*

Статья посвящена разработке подхода к комплексному адаптивному управлению интеллектуальным капиталом современного университета (в т.ч. отдельными подсистемами и их элементами) в системе его инновационного развития в условиях смены технологических укладов и четвертой промышленной революции. Определены последовательность и содержание формализованных процедур управления в т.ч.: определение перспективных стратегических направлений научной-образовательной деятельности университета в условиях технологических трансформаций, вызванных четвертой промышленной революцией; оценки по предложенному методическому подходу показателей уровня текущего состояния подсистем и элементов интеллектуального капитала с позиций достаточности для обеспечения инновационного развития университета по выбранным направлениям; принятие решений по управлению интеллектуальным капиталом университета, включая его подсистемы и их элементы, по результатам оценки их достаточности. Разработана концептуальная схема адаптивного управления интеллектуальным капиталом университета в условиях технологической трансформации в системе его инновационного развития. Полученные в статье научные результаты углубляют основы инновационного менеджмента научно-образовательных учреждений в части формирования подхода к адаптивному комплексному управлению интеллектуальным капиталом университетов как одной из главных предпосылок их инновационного развития в условиях трансформации технологических укладов и четвертой промышленной революции. Практическая реализация указанных разработок позволит существенно повысить эффективность управления процессами формирования, актуализации, усиления и использования интеллектуального капитала, формировать на этой основе предпосылки их инновационного развития, усилить позиции в мировых рейтингах. Она также будет способствовать развитию инфраструктуры рынка научно-образовательных услуг и инновационной инфраструктуры государства в целом, что особенно актуально для Украины.

Ключевые слова: интеллектуальный капитал, стратегическое управление, формализованные процедуры управления, инновационное развитие, рынок научно-образовательных услуг, четвертая промышленная революция, трансформация технологических укладов.

**INTELLECTUAL CAPITAL MANAGEMENT OF THE
UNIVERSITY IN THE SYSTEM OF ITS INNOVATIVE
DEVELOPMENT***Illiashenko Sergii^{a, b*}, Shypulina Yuliia^a, Illiashenko Nataliia^{c, d},
Golysheva Ievgeniia^{d, e}*^a National Technical University "Kharkiv Polytechnic Institute",
Kharkiv, Ukraine^b University of Economics and Humanities, Bielsko-Biala,
Poland^c Sumy State Pedagogical University named after A. S.
Makarenka, Sumy, Ukraine^d Sumy National Agricultural University, Sumy, Ukraine^e Wrocław University of Science and Technology, Wrocław,
Poland

*e-mail: illiashenko.s@gmail.com

Illiashenko Sergii ORCID: <https://orcid.org/0000-0001-5484-9788>Shypulina Yuliia ORCID: <https://orcid.org/0000-0002-8133-578X>Illiashenko Nataliia ORCID: <https://orcid.org/0000-0002-1426-1215>Golysheva Ievgeniia ORCID: <https://orcid.org/0000-0001-7788-9897>

The article is devoted to the development of an approach to integrated adaptive management of intellectual capital of a modern university (including individual subsystems and their elements) in the system of its innovative development in the changing technological environment and the fourth industrial revolution. The sequence and content of formalized management procedures are determined, including the determination of perspective strategic directions of scientific and educational activity of the university in the conditions of technological transformations caused by the fourth industrial revolution; assessments of the proposed methodological approach to the level of the current state of subsystems and elements of intellectual capital from the standpoint of sufficiency to ensure the innovative development of the university in selected areas; decision-making on the management of intellectual capital of the university, including its subsystems and their elements, based on the results of the assessment of their sufficiency. The conceptual scheme of adaptive management of university intellectual capital in the conditions of technological transformations in the system of its innovative development is developed. The scientific results obtained in the article deepen the principles of innovative management of scientific and educational institutions in terms of forming an approach to adaptive integrated management of university intellectual capital, as one of the main prerequisites for their innovative development in the transformation of technological systems and the fourth industrial revolution. The practical implementation of these developments will significantly increase the efficiency of management of the formation, actualization, strengthening, and use of intellectual capital of universities, to form on this basis the prerequisites for their innovative development, strengthen positions in world rankings. It will also contribute to the development of the market infrastructure of scientific and educational services and the innovation infrastructure of the state as a whole, which is especially relevant for Ukraine.

Keywords: university intellectual capital, strategic management, formalized management procedures, innovative development, market of scientific and educational services, fourth industrial revolution, transformation of technological systems.

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