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In discussion order

Kateryna V. Kolesnikova¹, Doctor of Technical Sciences, Professor, Professor of the Technology Management Department, E-mail: amberk4@gmail.com, Scopus ID: 57192559239, ORCID: <http://orcid.org/0000-0003-2366-1920>

Dmytro V. Lukianov², PhD, Professor, Department of Construction and Real Estate, E-mail: dlukiano@gmail.com, Scopus ID: 57192572835, ORCID: <http://orcid.org/0000-0001-8305-2217>

Tatyana M. Olekh³, PhD, Associate Professor of department Higher Mathematics and Systems Modeling, E-mail: olekhta@gmail.com, Scopus ID: 57189389154, ORCID: <http://orcid.org/0000-0002-9187-1885>

¹Taras Shevchenko National University of Kyiv, Volodymyrska Str, 60, Kyiv, Ukraine, 01033

²Intersectoral Institute for Advanced Studies and Retraining of Staff of the Belarusian National Technical University, Partizansky Ave., 77, Minsk, Belarus, 220107

³Odessa National Polytechnic University, Shevchenko Ave., 1, Odessa, Ukraine, 65044

THE ROLE OF A HIGHER EDUCATION DIPLOMA IN THE PROFESSIONAL CAREER OF THE SPECIALIST IN THE FUTURE

Annotation. *The field of information technology is extremely attractive in terms of job search. What do you need to be a specialist in this field? The information technology industry was the first to accept the fact that the ability to confirm the possession of knowledge, skills, and abilities in practice by a particular employee is higher than the presence of such an employee with an education document. This path also proved to be the fastest path for acquiring qualified personnel at the stage of the rapid development of the industry. There are more and more positions where experience is required, and not a specialized diploma. How characteristic are these trends for other areas of life? What is this? Is this step into the future or a tribute to modern trends? New technologies, new conditions, new business opportunities give rise to new knowledge and even new professions. There are no specialists in them, they will be trained in practice and practice will be their specialized education. Over time, universities and graduates will appear. But as life shows, it is precisely those who started without a diploma who will create new requirements and standards of professional activity the proposed research examines the current state of affairs in the field of education. The authors propose to analyze current trends in the labor market, to study some tools and training models. The question of the possibility of making a career without profile education is being considered. Can the holders of degrees and titles in a classical university provide the level of knowledge that employers need today? How relevant is the creation of corporate universities for the training and professional development of employees? According to surveys, more than 54 % of employers are willing to employ an employee without a diploma. Why? The quality of knowledge obtained at a university does not always meet the modern requirements of not only the information technology market but also just the labor market. However, at different times, companies and candidates have put different meanings in the definition of "good". The task of the university is to indicate the main reference points from which to build on, continuing to study independently throughout life. Therefore, obtaining a document on graduation is only the beginning of a career path. Having a diploma does not immediately allow you to get a well-paid job and implies further independent training and the acquisition of practical experience.*

Keywords: *information technology; diploma; VUCA world; competence; skills; knowledges*

Introduction. The information technology industry was the first to accept the fact that the ability to confirm the possession of knowledge, skills and abilities in practice by a particular employee is higher than the presence of such an employee with an education document. This path also proved to be the fastest path for acquiring qualified personnel at the stage of the rapid development of the industry. But this approach required a departure from the classical "canons" not only in the interaction of the employee and the employer in the labor market. It was necessary to change the requirements at the stage of training, to use new training models and innovative methods. Apostates from this sphere of activity allowed themselves to encroach [1] on three main points in working with personnel: diploma, resume, and interview.

Current situation. The precedent that has arisen and the lack of need to follow the established rituals of interaction between the employee and the employer are fully supported by the leaders of the world's leading IT corporations. Tim Cook not only "gives out inside information" about the qualifications of his company employees: "Half of Apple employees do not have a diploma. We are very proud of it" [2]. He's also ready to explain why he thinks so, and not in a "private conversation", but at a meeting of the American Workforce Policy Advisory Board in 2019: "We never considered that a diploma is required in order to be the best. We always tried to think wider. "Last year, about half of our employees in the United States did not have a college degree". Cook's opinion coincides with the point of view of IBM CEO Ginny Rometti, who stated at the World Economic Forum in Davos that "we need to hire employees for skills, not degrees and diplomas". A similar opinion is with Elon Mask

[3]: “Yes”, Musk said when asked whether he didn't require potential employees to have a college degree. Musk's answer echoed one he gave during a 2014 interview with the German automotive publication *Auto Bild*. “There's no need even to have a college degree at all, or even high school”, Musk said after being asked whether he considered which college a job applicant attended when evaluating a prospective Tesla employee. “If somebody graduated from a great university that may be an indication that they will be capable of great things, but it's not necessarily the case. If you look at, say, people like Bill Gates or Larry Ellison, Steve Jobs, these guys didn't graduate from college, but if you had a chance to hire them, of course that would be a good idea”.

Problem. Despite progress and technological development, the idea of the possibility of functioning something that does not meet any specific requirements today seems to many if not stupid then completely irresponsible. In most countries of the former Soviet Union, there are still rules that define procedures and/or other issues of confirmation of compliance with technical requirements, regulations, and specifications. These rules, among other things, determine:

- product certification;
- certification of work, services;
- certification of management systems (management);
- certification of personnel competence in the performance of certain works, the provision of certain services (hereinafter – certification of personnel competence);
- certification of other objects of conformity assessment;
- declaration of conformity [4-5].

Other countries also have their own requirements for the competence of personnel to meet certain specific requirements. For example, a single European Qualification System (EQS) [6], the main elements of which are:

- “coordinate system”, in which learning outcomes are distributed across 8 levels,
- “supporting tools” that are designed to individualize the learning paths of citizens. These tools include the European Credit Transfer System, the Europass document and the Ploteus database, which contains a list of training opportunities;
- general principles and procedures for cooperation between all stakeholders at different levels in areas such as quality assurance, official recognition of educational documents and key competencies.

Based on the EQS, which has a framework

design, the national qualification systems are compared and matched.

Qualification levels are established and described through the description of learning outcomes, which, in turn, are determined on the basis of:

- knowledge;
- skills;
- competencies, including personal and professional results.

Thus, each level is described in terms of results that can be compared with the qualification systems of different countries. Currently, almost all EU countries have already developed or are developing national qualification systems based on EQS. The EQS today provides a generalized description of the results. The learning outcomes are detailed in national systems and standards. The EQS contains an indicative table explaining how the levels of the EQS can be correlated with the levels of national education systems.

Learning outcomes are a set of knowledge, skills and/or competencies mastered by a person that can be demonstrated at the end of the training. The wording of the learning outcomes shows that the student must know, understand and do at the end of the training.

Today it is important to understand in what way, for how long and in what sequence training can be carried out. How to build this process so that between the beginning of the acquisition of knowledge and the moment of using the knowledge, a minimum time interval passes. How to realize the opportunity to improve knowledge in the context of professional activity? Comprehension of the need for a new approach on the one hand, and on the other hand, analysis of prevailing best practices in the educational system, has led to the emergence of a number of approaches to providing training for personnel in “other” ways than is accepted in “classical education”. Today, quite a few such approaches are known: “Learning by doing” [7], “Dual learning” [8], “Lean education” [9], “EduScrum” [10], “PBL” (Project Based Learning) [11] and others.

The EQS has a clear definition of such concepts as Competence and Qualification, as well as their relationship. Competence includes:

- 1) cognitive competence, involving the use of theory and concepts, as well as “hidden” knowledge acquired from experience;
- 2) functional competence (skills and know-how). This is what a person should be able to do in the labor sphere, in the field of training or social activity;
- 3) personal competence, which involves

behavioral skills in a particular situation and

4) ethical competence. Competence implies the presence of certain personal and professional values.

Thus, competence is an integrated concept and expresses a person's ability to independently apply in a certain context various elements of knowledge and skills.

Of particular importance is the level of independence, since it is it that allows you to distinguish between different levels of competence.

Qualifications are assigned by the appropriate body, which determines the compliance of the education with the established standard of knowledge, skills and broad competencies. The conformity of learning outcomes to the standard is established through the evaluation or successful completion of the training program. Training and assessment for obtaining qualifications can be carried out as part of a training program and/or in the process of work experience.

Qualification means official recognition of the value of the acquired competencies for the labor market. The qualification gives the right to work. Accordingly, there is such a thing as the "Qualifications System". The qualifications system is a tool for the development and classification of qualifications, based on a set of criteria for levels of learning. This set of criteria may be contained in the description of qualifications or may be arranged in a separate set of level descriptions.

All this coherent logic works well in a relatively stable external environment. However, today, everything around is changing rapidly. There was a concept, "half-life" of competencies [12]. The half-life of competencies determines the period of time during which half of the knowledge gained on a particular topic depreciates. Now, this assessment in relation to knowledge in the field of information technology is at a value of one year. This means that it makes no sense to train someone in applied technologies without the possibility of their immediate use. The rate of occurrence of such technological changes has become one of the reasons for the appearance of the concept of the "VUCA world" [13].

The term is an acronym:

- Volatility – the situation is changing quickly and unpredictably;
- Uncertainty – a change in situation cannot be predicted;
- Complexity – the situation describes a lot of difficulties to understand facts, causes, and relationships;
- Ambiguity – changes are ambiguity, ambiguity, and uncertainty.

The past decade has been so chaotic that Time magazine called this period the Decade from Hell. Many talent managers hoped that chaos was short-lived. But statistics show: you need to get used to the idea that this is a permanent state, and we must learn to manage it. Almost everything in modern HR, including talent management and staff planning, was created under more predictable conditions. Therefore, these techniques do not work in a chaotic environment. There are many more changes, speed, and dynamics in a VUCA environment. And all this has a devastating effect on business.

The question arises for modern leaders: "How to effectively search, select, develop, and retain the talents of your organizations in a volatile environment?"

It would like to rephrase and address the same question to the education system: "How to effectively seek, select, develop, and retain new knowledge and its carriers in your educational institution in a volatile environment? In an environment in which there are more changes taking place over the semester than before over the entire training period?"

Talent management, like the training and retraining system, is late in responding to VUCA world challenges. The concept of working in chaos is not new. Tom Peters has been discussing chaos management for more than 30 years [14], and "decision making in the face of uncertainty" today is a whole established scientific field. The novelty lays in the fact that most leaders of the economy, politics, and business have realized that the VUCA environment is the constant working conditions of today.

As a result, the time has come to admit that we do not know how to make strategically sound decisions in talent management, HR or recruiting, even if we can be successful in a VUCA environment. The following are a number of factors that make it possible to offset the lack of knowledge and skills of our own employees.

In addition, they are directly related to education and can provide high-quality work in the conditions of constant changes and uncertainty:

- rapid Learning – Work to increase the speed of individual and organizational learning;
- more internal rotation – develop the process of increasing the speed of internal movements of workers to positions where they will be more useful;
- temporary employment (Contingent labor) – use temporary workers in a significant proportion of your workforce to be ready for ups, downs in the market, the need for new competencies, skills, knowledge;
- the rapid increase in talent – Develop your

ability to quickly find and select talents in a variety of ways, including “poaching” and building professional communities;

- rapid release of talent – develop the ability to quickly get rid of workers with excessive or unnecessary competencies, skills, knowledge;

- flexible job descriptions (Fluid job descriptions) – develop a process of constantly changing job descriptions in order to reflect new standards of work and changes in activities [15].

Decision. To ensure constant “readiness for change”, it is necessary to revise the requirements for the continuing education system in the education system as a whole. Moreover, it is necessary to change the competency framework of existing specialists, at least. In addition, the solution to such a problem is impossible without high-quality support, both by the teaching staff and teaching materials, as well as by creating conditions for applying the acquired knowledge in practice. Of course, following the solution of such a problem, it is necessary to move on to ensuring the transformation of longer-term retraining programs, and, in parallel, a complete revision of the requirements for training specialists in higher education, as well as training personnel of higher scientific qualification.

Discussion. In the works [16-17] it is stated that “there is no longer one profession for life – you will have to constantly adapt to changes. In the near future, people will appear who will be able to feel the changes: diagnose skills and create individual training routes. Also, specialists will appear who have a certain set of competencies for solving certain problems that will correspond to their potential. Roles in teams will change. There will be a need for specialists who will lead these processes. For example, create a matrix of skills of an organization or an individual [18] define new “roles in teams” [19] or “matrix of requirements” [20-21].

The reality that exists today forces students, educational institutions and employers to change their usual patterns of behavior: “With student debt escalating and concerns persisting that college graduates are not job-ready, increasing numbers of companies are taking the training of their workers in-house”. But where that leaves the higher education sector, asks Paul Basken. Meanwhile, companies in key market sectors state that they can’t find enough qualified workers. There are tens of thousands of vacancies for software engineers, physician assistants and product managers, all positions that offer salaries in the range of \$100,000 a year, according to the job recruiting site Glass door. The need for some kind of fundamental change at the post-secondary level

therefore seems clear. And more and more US firms appear to be concluding that, college or no college, they themselves need to take graduates the final mile on employability, by teaching them the specific skills they need for particular jobs in an era of rapid technological advancement. “...Not all traditional education providers are resting on their laurels, however, when it comes to the future requirements of workforce training. Innovators include the City Colleges of Chicago system of seven community colleges, which has been working with 20 companies in the area to offer an alternative to a four-year university degree that combines a two-year associate’s degree with two years working as a company apprentice” [22].

Moreover, according to [23]: business executives and hiring managers reveal expectations for continued learning among their employees with a focus toward advancement 79 % of business executives and hiring managers report that their company provides professional development (Fig.1).

Majorities of executives (59 %) and hiring managers (53 %) say that their companies partner with colleges and universities in some way, most commonly to offer service learning opportunities, internships, and/or apprenticeships – underscoring the weight that employers place on applied experience and real-world skills when evaluating college graduates.

Executives and hiring managers at larger companies are significantly more likely than those at smaller companies to report that their companies partner with colleges and universities in most of these ways.

A study [23] was conducted in 2018 in the United States and related to future education.

The data of analytical reports on the state of the education system for 2019 [24] are even more categorical (Fig. 2):

It is logical that in such a situation a significant part of the funds allocated for education.

At least for the following reasons:

- a) the knowledge gained in long-term programs becomes obsolete by the time of obtaining a formal qualification (diploma);
- b) knowledge is transmitted through outdated systems designed for another audience;
- c) other reasons, which include “lost knowledge” due to the refusal of their further acquisition at the university [25].

Of course, there will also be a desire to “manage” educational programs more “economically”. At least from those who directly pay for such programs?

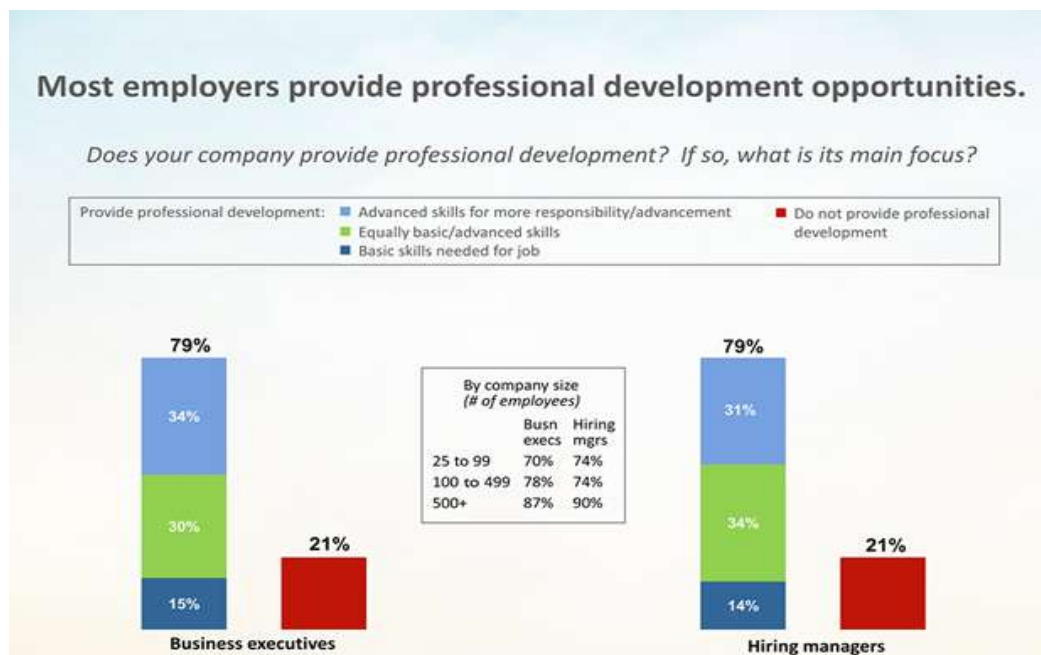


Figure 1. The proposal by companies of simply goes nowhere professional development programs in the USA (according to [23]).



Fig. 2. A comparative analysis of the “portraits” of the student audience in the 1970s and today (according to [24])

Accordingly, approaches to “Lean” management, which appeared in the management of production enterprises, also appeared in education management [26]. The lean training system as an element of a business strategy implements the principles of lean manufacturing. Those aimed at identifying and eliminating losses to increase labor productivity. In this particular case, to increase labor productivity in the learning process.

Speaking about the key factors of lean learning (Lean + Training), it should be noted that they do not fundamentally differ from the factors of lean manufacturing:

– identification and elimination of losses in training;

- the continuous flow of training;
- tact time and cycle duration;
- pulling training;
- standardization of the educational process;
- 5s – organization of a working (training) place (class);
- visualization of the educational process;
- awareness and involvement of the staff;
- kaizen – continuous improvement.

One should not lose sight of the fact that training itself is a kind of production process, during which value is added to some “product” (trainee) (knowledge and skills). The difference between training as a process and other types of production lies, first of all, in the difficulty of measuring the

return on invested funds, as well as in the active impact of the “product” (trainees) on the process.

It is known that the main principle of lean production is minimization, and ideally, the complete elimination of losses. This is fully consistent with the needs of the consumer (customer), who is willing to pay money only for those components of the production process that really add value to the product.

The leader in terms of the speed of change in the generation of new knowledge, of course, is information technology. This industry wins the competition for the best personnel, both at the “entrance” of the educational process (applicants) and at the “exit” (including retraining of specialists). At the same time, at the moment, by the enterprises of the IT sphere, two channels are used to ensure human resources. The first is the technical specialties of higher educational institutions. The second is internal training and retraining systems. Moreover, the created internal educational structures in some large corporations may compete in the number of students with classical educational institutions. Some of these projects are already well-known on the market – for example, Cyberry Academy [28], EPAM University [29], Softserv University [30]. These educational institutions are not accredited educational institutions and do not issue a document on the formation of a “state model”. Their activities are mainly aimed at their own employees or at the selection of future potential employees among the participants of free programs for all comers. The only requirement of such educational projects is to provide knowledge and skills to program participants in such a volume and quality that graduates are able to perform work as quickly as possible using the studied technologies.

Google’s corporate culture and human resources policy recognize that it calls into question the long-standing idea of the only right way to develop talent: “You don’t need a degree to be talented. If you see in front of you a person who has not studied at the university, but has achieved a lot, know that he is unique. And we are doing everything to find such people”.

In most cases, working in large companies requires a higher education diploma, but Google never asks to show a diploma. With the advent of corporate educational projects, many motivated people can themselves acquire the skills they need to succeed. [31-32]

Surveys conducted among students confirm this logic. For example, in a survey conducted by HackerRank [33], more than 10 000 students from various universities around the world took part

27.4 % of respondents reported that they learned to write the program code completely independently, 37.7 % supplemented their studies at the university with “homework”, and only 31.9 % learned to program at the university. The most popular third-party sources of knowledge were Stack Overflow (77.3 %), YouTube (73 %), and books (59.9 %).

As a result, the employer gets a problem - on the one hand, you want to have a specialist with fundamental knowledge. The knowledge that cannot be obtained in short-term training programs. On the other hand, we need specific skills and abilities that can be quickly learned with minimal “basic” training.

Therefore, an effective Corporate educational environment is considered as the main trend of 2020 [34]. Moreover, with a clear understanding of the need to carry out their functions throughout the life cycle of finding an employee in the organization, as a way to maximize the benefits of using the knowledge gained by specific employees of the organization for the whole organization [35-36].

The goal of such a system is to stimulate employees' own motivation and contribute to the creation of a hutagogical environment, that is, conditions in which an employee can consciously and independently engage in his professional and personal development [37]. And it is significant that in this report of Deloitte Global Human Capital Trends for 2019, education is also the main trend. More precisely, its continuous improvement by analogy with service management in IT – DevOps [38]: Our top-rated trend for 2019 is the need to improve learning and development (L&D). Eighty-six percent of respondents to our global survey rated this issue important or very important, with only 10 percent of respondents feeling “very ready” to address it.

To help accomplish this, we believe a new model may emerge which takes inspiration from the evolution in information technology development we have seen in recent years. As the pace of technological change has increased, IT teams have evolved from sequential, “waterfall” design-develop-test-operate models to new agile models, sometimes known as “DevOps,” that integrate system design, development, security, testing, and operations into a team-based, connected process. In similar fashion, we anticipate new approaches to integrating learning and work to arise, perhaps combining development and work into “DEVwork” – building on the realization that learning and work are two constantly connected sides of every job.

To help enable the creation of this “DEVwork” environment, we anticipate that business and HR leaders will need to:

– seek out opportunities to integrate real-time learning and knowledge management into the workflow. With cloud-connected mobile and wearable devices becoming almost omnipresent, and the introduction of augmented reality devices, organizations will be able to explore new approaches to virtual learning in which learning occurs in small doses, almost invisibly, throughout the workday;

– make learning more personal so that it is targeted to the individual and delivered at convenient times and modes so that people can learn on their own time. Here, technology can play an important role. With growing numbers of learning providers now offering video, text, and program-based curricula in smaller, more digestible formats, organizations have an opportunity to craft approaches that allow their workers to learn and when they see fit;

– integrate learning with the work of teams as well as individuals. As teams become more important in the delivery of more types of work, organizations will offer learning opportunities that support individuals as members of teams, providing content and experiences specific to the context of a worker's team.

Conclusion. In the future, with the spread of digitalization and the adoption by other industries of the concept of “specialist without a diploma” of course, the question arises – what is the role of the “state regulator” in the new system? Unfortunately, there is probably no answer acceptable for this structure. In the IT industry, a Cisco [39] or IBM [40] Academy certificate is sufficient proof of the required qualifications and does not require a “nostrification” procedure. Moreover, all industry specialist training systems, as a rule, have a system of requirements for qualifications and training of instructors (trainers), content and updating of training materials, requirements for the conditions for conducting classes, which include the provision of necessary laboratory equipment and supplies. In fact, in some cases, these requirements may be more stringent than those presented for accreditation of educational programs by the state. The only thing that allows maintaining a monopoly on educational services is the presence of teachers with degrees and/or ranks that are recognized by the highest certification commission of the country. But even this “bastion” can fall in the face of the need to carry out educational activities in the absence of teachers, both possessing the necessary knowledge and academic degrees. Knowledge and the need for their dissemination can prevail [41]. In this case, one should not be surprised that the concept of creating corporate training centers [42] in cooperation with

existing educational institutions can be transformed into the idea of ignoring existing requirements, both in terms of the requirements for formal confirmation of the knowledge of “applicants” of such centers and in the whole logic of subordination [43] to any standards other than industry standards. Although, perhaps this is the only way to restructure the vocational education system. This is confirmed by world practice: “No diploma? No problem in these hot fields”, offering jobs to specialists in the IT field [44] and confirming this with numerous of “success stories” [45].

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¹**Колеснікова, Катерина Вікторівна**, доктор техніч. наук, професор, професор кафедри технологій управління, E-mail: amberk4@gmail.com, Scopus ID: 57188623059, ORCID: <http://orcid.org/0000-0002-9160-5982>

²**Лук'янов, Дмитро Володимирович**, кандидат техніч. наук, професор кафедри будівництва і нерухомості, E-mail: lukianov@gmail.com, Scopus ID: 57192572835, ORCID: <http://orcid.org/0000-0001-8305-2217>

³**Олех, Тетяна Мефодіївна**, кандидат техніч. наук, доцент, доцент кафедри вищої математики та моделювання систем, E-mail: olekhta@gmail.com, Scopus ID: 57189389154, ORCID: <http://orcid.org/0000-0002-9187-1885>

¹Київський національний університет імені Тараса Шевченка, вул. Володимирська, 60, м. Київ, Україна, 01033

²Міжгалузевий інститут підвищення кваліфікації та перепідготовки персоналу Білоруського національного технічного університету, пр-т Партизанського, 77, м. Мінськ, Білорусь, 220107

³Одеський національний політехнічний університет, проспект Шевченка, 1, м. Одеса, Україна, 65044

РОЛЬ ДИПЛОМА ПРО ВИЩУ ОСВІТУ В ПРОФЕСІЙНІЙ КАР'ЄРІ ФАХІВЦЯ В МАЙБУТНЬОМУ

***Анотація.** Сфера інформаційних технологій вкрай приваблива з точки зору пошуку роботи. Якими навичками і знаннями, дипломами або сертифікатами повинен володіти претендент, щоб бути фахівцем в даній області? З'являється все більше позицій, де потрібен досвід, а не профільний диплом. Наскільки ці тенденції характерні і для інших сфер життя? Що це – крок у майбутнє? За даними опитувань, більше 54 % роботодавців готові працевлаштувати співробітника без диплома. Чому? Сьогодні гарну освіту – це перший крок до гарної кар'єри, проте в різні часи компанії і кандидати вклали різний зміст у визначення «гарне». Якість знань, отриманих у ВНЗ, не завжди відповідає сучасним вимогам ринку інформаційних технологій. Завдання ВНЗ – вказати основні опорні точки, від яких слід відштовхуватися продовжуючи навчатися самостійно протягом усього життя. Дипломований фахівець в більшості випадків не має практичного досвіду роботи, тому отримання документа про закінчення університету – це лише початок кар'єрного шляху. Наявність диплома не дозволяє відразу отримати високооплачувану роботу і має на увазі подальше самостійне навчання і набуття практичного досвіду. Запропоноване дослідження розглядає сучасний стан речей в галузі освіти. Автори пропонують аналізувати сучасні тенденції на ринку праці, розглянути деякі інструменти і моделі навчання. Розглядається питання чи можна зроби кар'єру без профільної освіти? Наскільки актуальним є створення корпоративних університетів для навчання і підвищення кваліфікації співробітників? Нові технології, нові умови, нові можливості для бізнесу народжують нові знання і навіть нові професії. Фахівців з ним немає, вони будуть навчатися на практиці та практика буде їх профільною освітою. Згодом, з'являться ВНЗ і дипломовані фахівці. Але як показує життя, саме ті, хто починав без диплома, будуть створювати нові вимоги і стандарти професійної діяльності.*

***Ключові слова:** інформаційні технології; диплом; світ VUCA; компетентність; навички; знання*

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¹**Колесникова, Екатерина Викторовна**, доктор технич. наук, профессор, профессор кафедры технологий управления, E-mail: amberk4@gmail.com, Scopus ID: 57188623059, ORCID: <http://orcid.org/0000-0002-9160-5982>

²**Лукьянов, Дмитрий Владимирович**, кандидат технич. наук, профессор кафедры строительства и недвижимости, E-mail: lukianov@gmail.com, Scopus ID: 57192572835, ORCID: <http://orcid.org/0000-0001-8305-2217>

³**Олех, Татьяна Мефодиевна**, кандидат технич. наук, доцент кафедры высшей математики и моделирования систем, E-mail: olekhta@gmail.com, Scopus ID: 57189389154, ORCID: <http://orcid.org/0000-0002-9187-1885>

¹Киевский национальный университет имени Тараса Шевченко, ул. Владимирская, 60, г. Киев, Украина, 01033

²Межотраслевой институт повышения квалификации и подготовки персонала Белорусского национального технического университета, пр. Партизанский, 77, г. Минск, Белорусь, 220107

³Одесский национальный политехнический университет, пр. Шевченко, 1, г. Одесса, Украина, 65044

РОЛЬ ДИПЛОМА О ВЫСШЕМ ОБРАЗОВАНИИ В ПРОФЕССИОНАЛЬНОЙ КАРЬЕРЕ СПЕЦИАЛИСТА В БУДУЩЕМ

Аннотация. Сфера информационных технологий крайне привлекательна с точки зрения поиска работы. Какими навыками и знаниями, дипломами или сертификатами должен обладать соискатель, чтобы быть специалистом в данной области? Появляются все большие позиции, где требуется опыт, а не профильный диплом. Новые технологии, новые условия, новые возможности для бизнеса рождают новые знания и даже новые профессии. Специалистов по ним нет, они будут обучаться на практике. Со временем, появятся соответствующие специальности в ВУЗах и дипломированные специалисты. Но как показывает жизнь, это именно те люди, кто будут создавать новые требования и стандарты профессиональной деятельности. Предложенное исследование рассматривает современное положение вещей в области образования. Авторы анализируют современные тенденции на рынке труда, рассматривают инструменты и модели обучения. Рассматривается вопрос можно ли сделать карьеру без профильного образования? Насколько актуальным является создание корпоративных университетов для обучения и повышения квалификации сотрудников.

Ключевые слова: информационные технологии; диплом; VUCA мир; компетентность; навыки; знания



Kateryna V. Kolesnikova, Doctor of Technical Sciences, Professor,
Professor of the Technology Management Department
Research interests: project management, knowledge management,
information technology



Dmytro V. Lukianov, PhD, Professor, Department of Construction and Real Estate
Research interests: project management, knowledge management, competence
assessment, information technology



Tatyana M. Olekh, Candidate of Technical Sciences, Associate Professor,
Department of Higher Mathematics and Modeling of Systems
Research interests: project management, modelling of complex system,
information technology