



Soft and Hard Skills for the Development of Young IT Specialists: Actual Challenges in the Conditions of Martial Law in Ukraine

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Abstract. The article focuses on the analysis of problems and the creation of proposals for improving the development of young IT-specialists in Ukraine. For this purpose, we performed a sociological study among young IT-specialists, and carried out a comparative analysis of educational programs for their training. The subject of the research is competencies and the need for their improvement as demanded by the labor market in modern conditions. We defined the key requirements for the development of relevant competencies in demand of the Ukrainian market as per the obtained results. The requirements are professional skills (knowledge of the programming language), knowledge of foreign languages, personal skills, time management skills, and working with modern IT technologies. The factors such as a need for developing commitment to the company, patriotism, creating a favorable (non-toxic) atmosphere, conscientious work, and developing a personalized career trajectory for a young IT-specialist turned out to be significant. For the most part, it is the result of an insufficient budget for the development of young IT-specialists, as well as their lack of motivation for development. Therefore, we propose to study the criteria for the selection of learning methods that take into account the characteristics of different generations and build individual development plans based on the principle of continuous education.

Keywords: Competencies · Personnel development · IT-sphere · Training

1 Introduction

Digitization of all spheres of social and economic life has become an integral feature of the modern world and characterizes the country's development level. The level of development of the IT-sector largely affects the competitiveness of the country in the world and its recognition as a locomotive of economic development of the global world.

Globalization becomes another modern feature, it encourages the dynamic development of any other sphere, including IT, accumulating new knowledge and creating

new technologies. Because of market competition, the requirements for the work of IT-specialists are changing rapidly. But against the background of the growing demand for new competencies in IT-sector, education does not always keep up with these transformations. Therefore, companies are facing the problem of “tuning” young IT-specialists to their own modern needs. It becomes obvious that the time has come when companies that invest a lot in human capital, in the soft and hard skills and competence of employees, will become the most competitive. Scientists and professional managers have long proven the tight connection between personnel development, labor productivity, effective management, and the competitiveness of organizations in the market. Therefore, at the current stage, the importance of the independent initiative management of personnel development is rising for companies. At the same time, to “polish” the competencies of employees, the company should have “ready-made material”, that is, graduates of educational institutions with basic knowledge, soft and hard skills. This task is the interaction of business and educational institutions for the development and implementation of educational programs that meet the demands of the labor market.

Ukrainian digital ecosystem year after year demonstrates fast transformation. Therefore, it is the continuous process of development that helps to be competitive and meet the modern requirements of the labor market [1]. The works of S. Burbekova deal with the problems of future specialists [2], however, the issues of the “connection” between the development of current and future soft and hard skills, competencies are neglected. Considering the model of development of competency in informatics of future specialists, some authors [3] focused on how it is acquired, in particular through special training. Some others in their scientific studies [4] are focusing on the following aspects: development of basic knowledge, soft and hard skills. Studying the basics of standardization of competencies in information and communication in the education system of Ukraine V. Bykov and others emphasize the importance of following the approaches that exist in the USA and Europe [5].

The analysis of the multi-component structure of the professional competence of future specialists provides an opportunity, thanks to the addition of special competencies of future specialists in information technology by isolating its informational and computing component, to characterize and supplement the structure of the professional competence of specialists in information technology [6]. Some works highlight learning strategies that will contribute to the readiness of IT-specialists for professional activities in the conditions of the fast development of information systems [7]. At the same time, for the effective management of personnel development, it is important to take into account the motives of employees and the needs of the organizations [8]. It has also been proven that IT-professionals who choose their first job according to their profession show a higher level of persistence in the IT-sector [9]. According to PwC’s 23rd Annual Global CEO Survey, 74% of CEOs are concerned with the availability of main skills that help their businesses grow. Yet, in a report presented by UNICEF, as much as 31% of young people say that the skills and training offered to them don’t match their career aspirations [10].

The relevance of the problem of the development of young IT-specialists in Ukrainian organizations is linked with an in-depth study of such little-studied issues in Ukraine as the customization of the young IT-specialists development accounting for their need

for it, the need for continuous training and development of young IT-specialists, the need in the development of technical “hard skills” and universal “soft skills”, and the continuity of the process of adaptation of young IT-specialists to internal changes in the organization and global changes in the world [11].

The purpose of the work is to research the requirements for the development of relevant competencies (soft and hard skills) of young IT-specialists (the example of Ukrainian companies), define the main problems in this area, and offer ways, including the popular training methods, to overcome them.

2 Materials and Methods

The research of the requirements in competencies (soft and hard skills) was conducted with the method of content analysis of the actual requests of employers searching for candidates for vacant positions of IT-specialists and their systematization and generalization. The applications (for September–December 2023; a total of 267 applications) from the main job search sites in the country [12, 13] were processed and the results of previous studies [14, 15] were analyzed. The comparative analysis made it possible to single out the key competencies demanded by the modern labor market in the country. Researching the competencies that need to be developed required conducting surveys among IT-specialists, therefore an appropriate questionnaire was created. Empirical data for this study were collected in October–December 2023 through the Google questionnaire—a form that was distributed among graduates from Kyiv National Economic University named after Vadym Hetman of 2023 working in the IT-sector.

The consistency and reliability of the results obtained in surveys can be assessed with Kendall’s coefficient of concordance.

The sum of the ranks given by each expert is:

$$R_i = m(m + 1)/2, \quad (1)$$

and the mean value given by any expert is:

$$R = \sum R_i / M, \quad (2)$$

where M is the number of experts and m is the number of evaluated indicators.

Then coefficient of concordance is:

$$W = \frac{12 * \sum \Delta^2}{M^2} * (m^3 - m), \quad (3)$$

where $\sum \Delta^2$ is the sum of squared deviations of experts’ ranks from the average:

$$\Delta^2 = (R_i - R)^2. \quad (4)$$

The higher Kendall’s coefficient of concordance the more consistent the answers of the respondents are. In our case, the concordance coefficient will be equal to 0.9001, which indicates that the answers in the survey are consistent and suitable for further evaluation.

3 Experiments

Ninety people took part in the survey, which is 29.3% of the total number of full-time and part-time graduates of the first (bachelor) level of higher education of the educational programs “Economic Cybernetics”, “Computer Science”, “System Analysis”, and “Cybersecurity” and the second (master’s) level of higher education of the educational programs “Computer Science”, “System Analysis”, and “Artificial Intelligence Systems”. More than half of the young IT specialists who took part in the survey work at service enterprises (Table 1).

Table 1. Distribution of surveyed young IT specialists by the area of economic activity of the organization/company where they work, %*.

Area of economic activities of the organization/company	Key consumer	
	Intermediaries	End consumers
Production	20.83	11.11
Trade	12.50	21.22
Services	50.00	52.00
Other:	16.67	15.67
Together:	100.00	100.00

Source: own sociological research, 2023

The structural distribution per various contextual factors of organizations, where young IT specialists who took part in the survey work is as follows (Table 2).

Table 2. Distribution of the surveyed young IT specialists by contextual factors of the organizations/companies where they work.

Contextual factors of employment in the organization/company	Structure of respondents, %
“Nationality” of capital	
Local, private/collective	57.14
Local, state-owned	14.29
Foreign	10.71
Joint venture with a foreign partner	17.86

(continued)

Table 2. (continued)

Contextual factors of employment in the organization/company	Structure of respondents, %
“Nationality” of management	
Local managers only	75.00
Foreign managers participate in management	17.86
Mainly foreign managers are in charge	7.14
History of the development of the organization/company	
New entrepreneurial organization/company	67.86
Former Soviet state enterprise	21.43
Other	10.71
Together:	100.00

Source: own sociological research, 2023.

The gender structure of the respondents: 36 people (40.0%) are female, 54 people (60.0%) are male. Twenty-six respondents (28.9%) have work experience of up to 1 year, 36 people (40.0%) have 1 to 3 years of work experience, and 28 people (31.1%) have 3 or more years of work experience.

The system analysis and generalization were used for the development of proposals for the elimination of the identified shortcomings.

4 Results

Today, large IT companies in Ukraine are facing numerous difficulties. In particular, according to the results of a survey among IT-specialists in February 2023 with 7,021 respondents, 39% of them noted that their company had laid off employees during the previous year [16]. Unfortunately, companies are increasingly “sending” IT-specialists to the reserve—71% of IT-specialists were sent to the reserve from outsourcing companies (in general, 42% of IT-specialists work in outsourcing companies), and 60%—from companies with more than 1,000 employees (in general, they comprise 28% of all specialists) [16]. All this makes the competitive environment among IT-specialists more “tough”, so the development of relevant competencies (knowledge, soft and hard skills) becomes a problem not only for the employee but also for the company itself.

Carrying out a comparative analysis of the competencies of IT-specialists in demand in the Ukrainian labor market (Fig. 1), one can conclude that they match the generally recognized competencies that «The Future of Jobs Report 2020» [17] considers to be the most relevant. Therefore, their list will be included in the further analysis of the content of educational programs and the needs for IT-specialists training.

The successful career start of young IT-specialists depends on the competencies (knowledge, soft and hard skills) acquired by them in higher educational institutions. This, in turn, brings forward additional requirements for the content of disciplines, the declared competencies.

Before proceeding to the analysis of competencies declared by educational programs, it is worth examining the educational standards for the main IT specialties. The

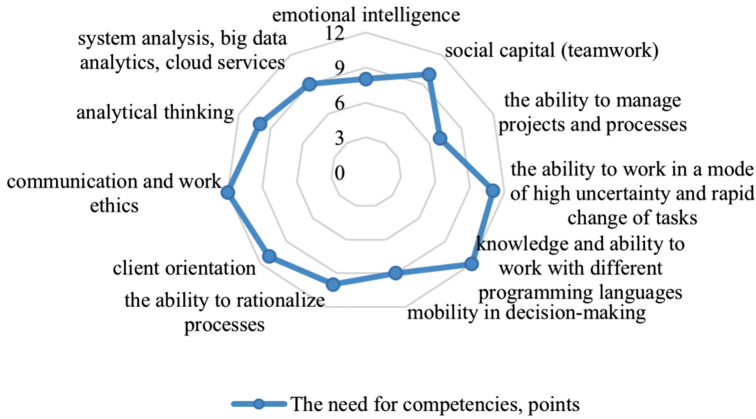


Fig. 1. Competencies required for IT-specialists in Ukraine, in points (maximum 12 points). Source: built from data [12, 18–20].

suitability of professional competencies to the needs of the market becomes obvious. For example, comparing current “hard skills” from the declared competencies in the educational standards to the competencies that meet the needs of the market, one can see high suitability: analytical thinking is represented by special competencies, such as the ability to detect patterns, use mathematical models, etc.; competency of system analysis is represented by the abilities of system thinking, intellectual data analysis; competency of rationalizing processes—through competencies of ensuring the organization of digital processes, network software development, and managing life cycle of information processes and software systems (including products and services), etc. At the same time, among the declared general competencies there are “soft skills”—represented mainly by the ability to communicate in foreign and national languages, to base actions on ethical considerations, and according to only some interdisciplinary standards (system analysis, economic cybernetics), abilities for creative thinking, interpersonal interaction, and adaptation to new situations are provided [21].

A thorough analysis of the content of educational programs of universities, in particular: Kyiv National Economic University named after Vadym Hetman, National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”, V. N. Karazin Kharkiv National University, Lviv Polytechnic National University, National Aviation University, revealed that they are oriented towards meeting the requirements of the relevant educational standards, but they pay too little attention to the requirements of the business (unfortunately, programs are often designed for specific employers, and do not take into account the possibility of changing career paths) (Table 3).

Analysis of the educational components shows that the programs are more focused on the acquisition of practical professional skills, in particular, “hard skills”. This meets the educational standards approved by the Ministry of Education. At the same time, as one can see from (Table 3 and Table 4), the development of “soft skills” is poor.

Annual discussions of “hard skills” and “soft skills” with employers who are partners of the educational programs “Economic Cybernetics”, “Computer Science”, “System

Table 3. Accounting for the requirements of the labor market in certain competencies by educational components (disciplines).

Correspondence of the actual competencies of IT-specialists determined by the global community															
Assessment of the presence/absence of specified competencies in educational components of educational programs	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	K13	K14	K15
	+	–	±	±	+	–	±	+	–	+	–	±	±	+	–

Note: * notation in the table: conformity, presence of a component that allows one to acquire competency—“+”; absence—“–”, or partial conformity—“±”;

Competencies: K1. Analytical thinking and innovation; K2. Active learning and learning strategies; K3. Comprehensive problem-solving; K4. Critical thinking and analysis; K5. Creativity, originality, and initiative; K6. Leadership and social influence; K7. Use of technologies, monitoring, and control; K8. Design and programming technology; K9. Durability, stress resistance, and flexibility; K10. Reasoning, problem-solving, and ideas; K11. Emotional intelligence; K12. Troubleshooting and interaction with users; K13. Orientation towards service; K14. System analysis and assessment; K15. Persuasion and negotiation. Source: Compiled by authors for [22–27].

Analysis”, and “Artificial Intelligence Systems”, in particular, at the 11th International Business Forum of KNEU “Science-Business-Education: Strategic Partnership” [29] on November 23, 2023, confirmed the results of the content analysis of the educational components (disciplines) for the availability of relevant competencies for IT specialists.

As per the results of the discussion at the panel discussion “Educational trends and business practices in the new world” and the survey of 25 employer-partners, the most relevant special (professional) “hard skills” for graduates/young IT specialists are (according to estimates from 1 to 5, where 1 is almost not relevant, 5 is highly relevant): analytical thinking (78.2%), ability to identify patterns (74.5%), systems thinking (68.3%), knowledge of a programming language (65.4%), the ability to work with modern IT technologies (61.4%), intelligent data analysis (58.7%), the ability to organize computing processes (55.6%), the ability to develop network software (49.8%) (Fig. 2).

Discussions with the employer-partners revealed a low level of “soft skills” among graduates/young IT specialists. As per the received scores (from 1 to 5) on the question “What skills/competencies (“soft skills”) do the employer-partners expect from graduates?” communication skills came on top (76.9%). The rest are, in descending order, the ability to work in a team (69.2%), work independently (61.5%), make informed decisions (53.8%), critical and creative thinking (53.8%), imaginative thinking (52.1%), stress resistance (48.4%), and the ability to manage emotional intelligence (46.3%) (Fig. 3).

Table 4. Results of the content analysis of the content of educational components (disciplines) for the availability of relevant competencies for IT-specialists.

Name of educational programs	Components in EP for the development of “hard skills”					Components in EP for the development of “soft skills”						Social and behavioral	
	Multidisciplinary	Narrowly specialized	Work with modern technologies	Knowledge of foreign languages	Time management	Analytical thinking	Entrepreneurial	Management	Intellectual	Emotional and volitional	Adaptive		Communication skills
Educational programs of the first (bachelor) level of higher education													
EC ^a	+	±	–	+	–	+	–	–	–	–	–	–	–
CS ^b	+	+	+	+	–	+	–	–	–	–	–	–	–
SA ^c	+	+	+	+	–	+	–	–	–	–	+	–	–
SA&C ^d	+	+	+	+	–	+	–	–	–	–	–	–	–
S&M of AI ^e	+	+	+	+	–	+	–	–	–	–	–	–	–
CS in FT ^f	+	+	+	+	–	+	–	–	–	–	–	–	–
CS&IT in B ^g	+	+	+	+	–	+	–	–	–	–	–	–	–
CI of SS ^h	+	+	+	+	–	+	–	–	–	–	–	–	–
DA&AI ⁱ	+	+	+	+	–	+	–	–	–	–	–	–	–
Educational programs of the second (master's) level of higher education													
CS ^b	+	+	+	+	–	+	–	+	–	–	–	–	–
SA ^c	+	+	+	+	–	+	–	–	–	–	+	–	–
AI ^j	+	+	+	+	–	+	–	–	–	–	–	–	–
S&M of AI ^k	+	+	+	+	–	+	–	–	–	–	–	–	–
CS&N ^l	+	+	+	+	–	+	–	–	–	–	–	–	–

Note: ^aEconomic Cybernetics, ^bComputer Science, ^cSystem Analysis, ^dSystem analysis and control, ^eSystems and Methods of Artificial Intelligence, ^fCyber security in financial technologies, ^gComputer science and information technology in business, ^hComputational intelligence of smart systems, ⁱData analytics and artificial intelligence, ^jArtificial Intelligence Systems, ^kSystems and Methods of Artificial Intelligence, ^lComputer systems and networks. Entrepreneurial competencies—testing of business ideas and their development, cost balancing, Management competencies—business management, project management, stress management, and others; Intellectual competencies—quick analysis and problem-solving, positive, creative, and critical thinking, etc.; Emotional and volitional competencies—leadership, self-control, stress resistance, confidence; Adaptive—logical thinking, adaptability to changes, etc.; Communication skills—the ability to negotiate, public speaking, the ability to listen to the interlocutor, etc.; Social and behavioral competencies—the ability to support, work in a team, self-organization, organization, and diligence. Source: [23–28].

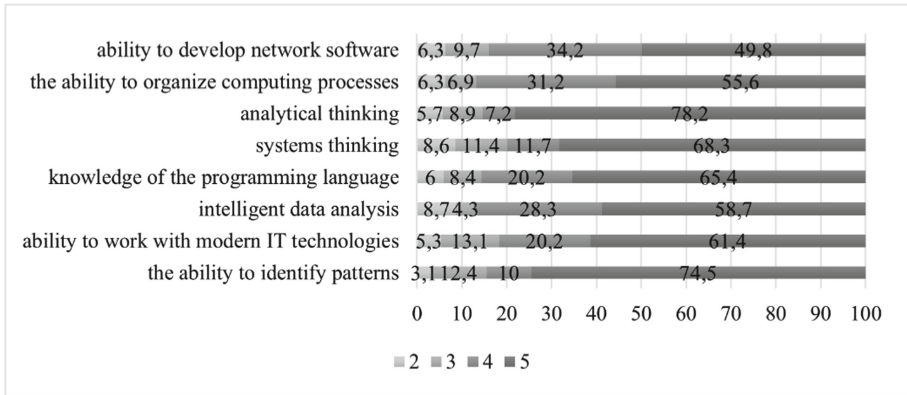


Fig. 2. Distribution of ratings (from 1 to 5) by surveyed employer-partners regarding the most relevant special (professional) “hard skills” for graduates/young IT specialists, %. Source: own sociological research, 2023.

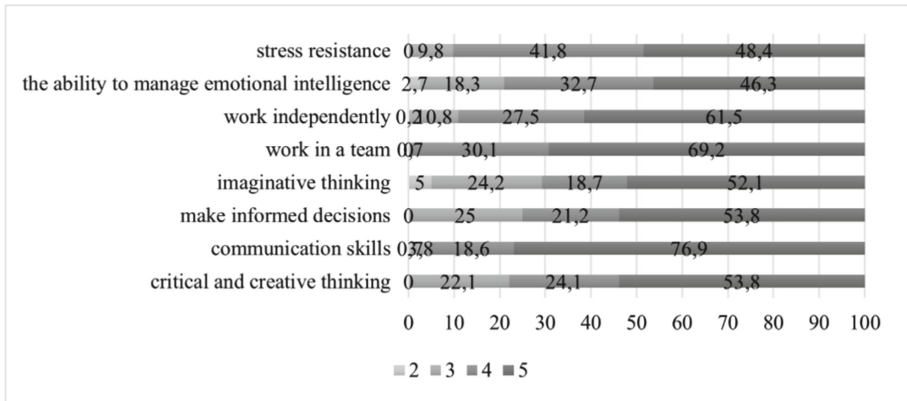


Fig. 3. Distribution of ratings (from 1 to 5) of surveyed employer-partners regarding the most relevant special (professional) “soft skills” for graduates/young IT specialists, %. Source: own sociological research, 2023.

The answers to the question “Which “soft skills” do you recommend mastering by higher education students of the specified educational programs?” were: “more communication skills” and “critical, creative thinking, and morality”. Answering the question “Which educational components (educational disciplines), in your opinion, should be added for students of higher education to master the specified educational programs?” employer-partners offered educational disciplines that develop communication skills and the ability to build an individual career path. In particular, the introduction of “Communications and conflicts in project groups” as the main subject.

The layoff of IT-specialists in Ukraine that occurred due to the war once again prompted a new assessment of the structure and content of competencies required today. The situation is such that many IT-specialists in Ukraine are afraid of losing their jobs

despite working in professions that are actively developing. Therefore, when selecting a place of work, specialists evaluate the possibilities of career growth and professional development in the company.

The sociological research results showed the level of satisfaction of working young IT-specialists with their development in the company. Effectively, 46% or 41 persons of the surveyed respondents were satisfied, while 54% or 49 of respondents were not satisfied with the actual state of their development in the company. The results of the survey indicate that the development of young IT-professionals in many organizations where they work does not meet their expectation.

The survey also revealed the frequency of training events among young IT-specialists in organizations. Thus, training events are held every week for 15 of the surveyed people (16.7%), every month—for 24 people (26.7%), every six months—for 19 people (21.1%), every 5 years—for 5 of the interviewed persons or 5.6%, and 27 persons (30%) do not receive any training. Some organizations pay serious attention to the development of young IT-specialists (weekly, monthly, every six months), however others, as indicated by 30% of the surveyed respondents, do not invest in the IT workforce at all.

According to the interviewed young IT-specialists, the most effective method of professional training is training in the workplace in the form of a mentoring system, which was mentioned by 53 (58.9%) of respondents (Fig. 4).

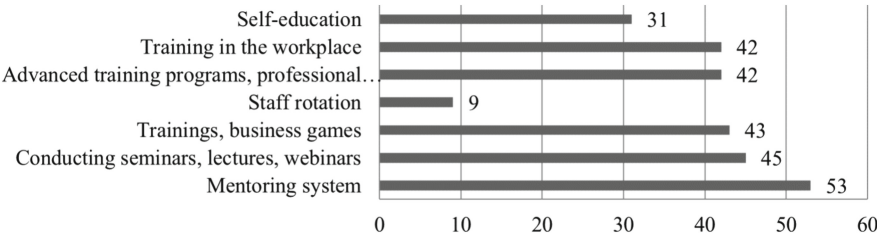


Fig. 4. The most effective methods of development, according to the interviewed young IT-specialists, persons. Source: own sociological research, 2023.

Also, the interviewed young IT-specialists indicated specifically those development methods that are actually used in their organizations (Fig. 5).

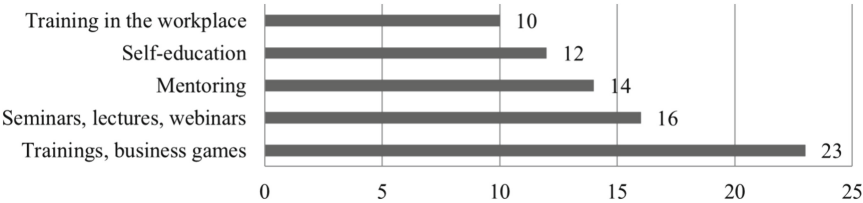


Fig. 5. Methods of development of young IT-specialists that are actually used in Ukrainian organizations, persons. Source: own sociological research, 2023.

The five leading methods are training and business games—noted by 23 people (25.6%), lectures, seminars, and webinars—by 16 people (17.8%), mentoring—by 14 people (15.6%), self-education—by 12 people (13.3%), training in the workplace—by 10 people (11.1%).

The survey revealed that the organization created an individual development plan for only 15 young IT-professionals (16.7%) and, accordingly, 75 respondents (83.3%) do not have one. This indicates that training is not systematic, it is often aimless, and there is a lack of long-term development planning. Interestingly, two respondents indicated the method of punishment among the methods of development of young IT-specialists. The interviewees do not have a clear notion of who is responsible for the development of young IT-specialists. Thus, 33 people (36.7%) believe that the employee is personally responsible, 30 people (33.3%) believe that the direct supervisor of the young specialist is responsible, 11 people (12.2%) believe that their employer is responsible and 10 people (11.1%) consider the HR department to be responsible.

The actual needs of the development according to the interviewed young IT-specialists are as follows: 93.3% of respondents (84 persons) need to develop professional skills, 57.8% of respondents (52 persons) need to learn foreign languages, 52.2% of respondents (47 persons) need development of personal skills, 45.6% of respondents (41 persons) require time management training, and 43.3% (39 persons) want more skills for working with modern technologies (Fig. 6). Among other development needs there are: loyalty to the company, patriotism, creating a safer climate, and decent work.

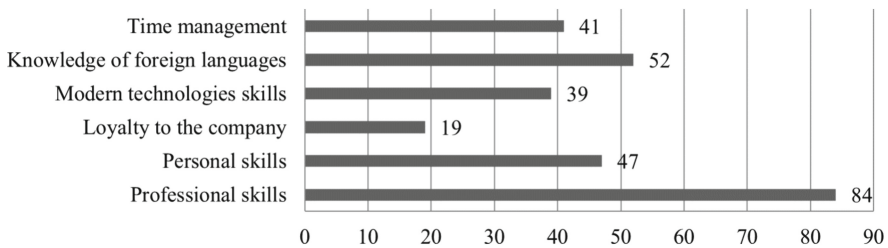


Fig. 6. Competencies that young IT-specialists want to develop primarily, persons. Source: own sociological research, 2023.

Additionally, among the needs of young IT-specialists there is the development of such soft skills as communication skills for 72.2% of respondents (65 persons), critical thinking for 64.4% of respondents (58 persons), creativity for 56.7% of respondents (51 people), while stress resistance, leadership, and positive thinking received significantly fewer votes among surveyed young IT-specialists.

In the course of sociological research, young IT-specialists assessed the goals of their development for the company (Fig. 7).

The leading answer by a large margin was “to ensure high efficiency and productivity of the staff”—85.4% of the respondents (76 persons); the second place had the answer “to motivate and make the young specialist interested”—59.6% of the respondents (53 persons). The interviewees among the factors that most affect the effectiveness of young IT-specialists training in the organization pointed out: employee motivation.

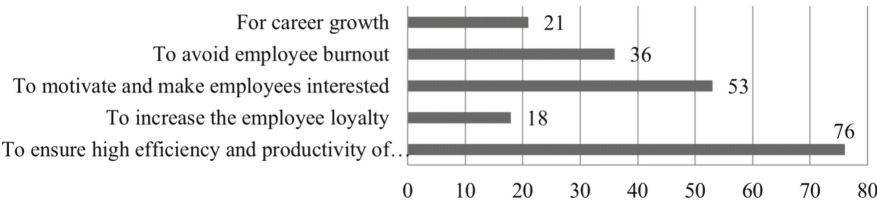


Fig. 7. The goal of personnel development from the perspective of the interviewed young IT-specialists, persons. Source: own sociological research, 2023.

Accordingly, as per the results of the survey of young IT-specialists, some problems that prevent organizations from developing them effectively were identified (Fig. 8).



Fig. 8. Problems in organizations that young IT-specialists regard as making their development ineffective, persons. Source: own sociological research, 2023.

5 Discussion

Sociological research has shown that young IT-specialists see the following main problems in their development in Ukrainian organizations:

- A significant degree of dissatisfaction with the actual state of development in the organization, as indicated by 54% of respondents
- The lack of a development process in general for young IT-specialists in the organization, 30%
- The lack of customization in the development of young IT-specialists, 83.3%
- The low effectiveness of HR services concerning the development of young IT-specialists, 35.6%
- The lack of a strategic approach, continuity, and planning of the development process of young IT-specialists, 67.8%
- The low motivation of young IT-specialists for their development, 48.9%
- Insufficient budget for the development of young IT-specialists, 61.1%

Taking into account the shortcomings listed above, the development of young IT-specialists could be improved in the following areas:

1. All organizations need to draw up a personnel development plan that takes into account the development strategy of organizations, to allocate a sufficient budget for personnel development. Investment in personnel development should be kept at a level not lower than 6.0% of all expenditures on personnel. At least 30% of the organization's personnel should be covered by training and development programs.
2. To implement a customized approach to the development of young IT-professionals accounting for their needs. To build an educational trajectory in such a way as to promote the development of the necessary competencies in young IT-specialists. Analysis of the personalized needs for the development of young IT-specialists (training, advanced training, etc.) requires additional material, for example, the "Guidelines for training" ISO 10015–1999.
3. To digitize the HR processes of training and development of young IT-specialists with the stress on online seminars and training, digital platforms, and platforms for creating courses, which will open wide opportunities for effective corporate training.
4. To use modern methods of development of young IT-specialists (such as e-learning, gamification, and mobile apps, etc.), follow modern tendencies and trends, and adopt the best practices of modern IT companies.
5. To introduce a system of motivation to increase the degree of interest of young IT-specialists in training and development. To form the internal motivation of young IT-specialists for learning and development as a set of motives and goals: for example, self-realization, personal growth, striving to be the first.
6. The identified needs for the development of key competencies, both "hard skills" and "soft skills", of graduates from KNEU named after Vadym Hetman 2023, and now young IT-specialists, and defined main problems ("weaknesses") in the application of those key competencies brings forward the proposition to include in educational programs additional subjects for the development of competencies in establishing communications and knowledge about careers. In particular, the introduction of "Communications and Conflicts in Project Teams".
7. In addition, it will be appropriate during the delivery of the main subjects to develop imaginative thinking—the ability to formulate and present work tasks in an accessible and understandable way to all participants involved in the creative process. And for this, it is worth strengthening the adaptability of future IT-specialists to changes in requirements to both the level of knowledge and personal characteristics.
8. If we take into account the circumstances in which IT-specialists often work in Ukraine (namely, the risks of shelling, and virtual or remote work in teams), then initially it is appropriate to provide employees with psychological and social support, especially during relocations. Then, it is important to organize and conduct training on stress management and first aid for future and already working specialists.
9. Creating the recommendations for the training of future IT-specialists, a few additional important soft skills stand out—they are the accumulation of social capital and the acquisition of the ability to manage emotional intelligence. Acquiring these soft skills is extremely difficult, as it requires constant work with students, i.e., not only through training, but also through cultural, sports, and scientific activities.

6 Conclusion

Summing up, it should be noted that the success in the career of a young IT-specialist in Ukraine depends on the competencies acquired in higher education. Making educational programs in compliance with only the requirements of the relevant educational standards of the Ministry of Education and Culture of Ukraine for the acquisition by the students of professional competencies—“hard skills” leads to a “loss of attention” to the requirements of the modern labor market regarding the acquisition and development of universal “soft skills”. However, the significant layoffs of IT-specialists in Ukraine as a result of the war prompted higher education institutions to restructure the list and content of competencies that are relevant today.

This fact emerged in the discussions with the employer-partners of the educational programs at the 11th International Business Forum “Science-Business-Education: Strategic Partnership” in KNEU. As per the talks at the panel discussion “Educational trends and business practices in the new world” and the survey among employer-partners, the necessary “soft skills” for a graduate/young IT specialist are communication skills, the ability to work in a team, work independently, make informed decisions, critical and creative thinking, imaginative thinking, stress resistance, and the ability to manage emotional intelligence.

The uniqueness and scientific novelty of the study is the combination of several methods and techniques used to identify soft and hard skills essential for the development of young IT professionals in the difficult conditions of martial law in Ukraine. This was achieved by a comprehensive diagnosis of the educational components of the IT industry based on:

- Content analysis of actual requests from employers searching for candidates for vacant IT positions and their systematization and generalization (267 applications from the main job search sites in Ukraine were processed);
- Comparative analysis of the competencies of IT specialists in demand in the Ukrainian labor market and the generally recognized relevant competencies advocated by the World Economic Forum;
- In-depth content analysis and “itemization” of the educational components of the EP in the IT field of various Highest Educational Institutions in Ukraine;
- Summarization of annual discussions with employer partners of educational programs in the IT field at the International Business Forum “Science-Business-Education: Strategic Partnership” in the Kyiv National Economic University named after Vadym Hetman;
- Ranking of relevant “soft skills” and “hard skills” as per the specialized sociological survey among 25 partners-employers of educational programs in the IT field;
- Analysis and author’s assessment of the needs for relevant soft and hard skills for the development of young IT professionals working in Ukrainian companies in wartime conditions (as per the sociological survey among 90 young IT professionals—graduates of 2023 from the KNEU University named after Vadym Hetman);
- Detailed analysis and generalization in the processing of proposals to address the identified shortcomings and their causes in the development of young IT professionals (accounting for the identified needs for relevant soft and hard skills).

As per the comprehensive diagnostics, a direct and tight connection between the “soft skills” needed for young IT professionals, their competitiveness and the needs of employers that account for current challenges and trends in the Ukrainian labor market has been identified. The acquisition of “soft skills” by young IT professionals significantly impacts their promotion and positive development within the company. The article proves the importance of improving the competence of young IT professionals with regard to “soft skills” when formulating a strategy for the development of young IT professionals in Ukrainian companies in wartime conditions. The results of the comprehensive analysis of the educational components of the IT industry are important in terms of improving the relevant educational programs that address the development of “soft skills” in students of Ukrainian higher education institutions.

At the same time, the conducted research has some limitations caused by the choice of the respondents (focused on IT-graduates with basic economic training), which does not allow spreading the results to the entire market of training IT-specialists. Therefore, accounting for the influence of force majeure factors (military actions, pandemic, etc.), it's worth directing further research in the development of young IT-specialists to studying the opinions of business owners and HR managers regarding the organization of this process and the generalization of the best practices of training young IT-specialists in various fields of activity. Therefore, a significant scientific and practical result of the study is the substantiation of differences in approaches to the development of competencies between institutions of higher education and business organizations. They can be overcome by the harmonization of the needs of the labor market and the content of educational programs.

The issues of criteria for selecting educational methods that take into account the characteristics of different generations and building individual development plans that support the principle of continuous education remain insufficiently studied. There lies a practical benefit and the prospect of further scientific research in this direction.

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