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To cite this article: L P Tkachenko *et al* 2021 *J. Phys.: Conf. Ser.* **1840** 012064

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# Implementation of professionally oriented ICT in the process of managers training

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**Abstract.** The article touches upon the problem of introducing professionally oriented software products based on information and communication technologies into the educational process of training managers of the hotel, restaurant and tourism business. The purpose of the study is to prove the effectiveness of the implementation of professionally oriented software products based on ICT in the training of managers. The research is based on the analysis of recommendations of employers and managers of the specialties “Tourism” and “Hotel business”, the content of educational programs for training bachelors in management, the content of general professional and special competencies, the structural and logical scheme of disciplines. The most effective information and communication technologies using computer software products that contribute to the formation of a set of professional competencies in future managers have been identified: MS Project, Teamwork, TeamLab, Open Workbench, GanttProject, dotProject, Outlook, OneNote, EverNote, Nirvana, Wunderlist, Toggl, MS Office, Office 365, Document.Online, AllFusion Process Modeler 7, MS Visio, MS PowerPoint, MS Sway, Libre Office.Impress, FreeMind, Mind42, ViSta, MacANOVA, Matrixer. The effectiveness of these technologies has been experimentally tested in the course of practical training in the format of full-time distance learning and practical training of student managers. The research describes the technology of using professional software products in the educational process. The effectiveness of these technologies has been experimentally tested in the course of practical training in the format of full-time distance learning and practical training of student managers. The research describes the technology of using professional software products in the educational process. The results of the pedagogical experiment confirmed that the introduction of information and communication technologies contributes to the formation of professional competencies in the field of ICT among students of this specialty. The conducted research proves the need for changes in the working curricula of disciplines “Information systems and technologies”, “Practices of information and communication technologies”, “Statistics”, “Management and administration”, “Finance, money and credit”, “Accounting and audit”. “Business foreign language”, “Professional rhetoric”, “Foreign professional language”, “PR and advertising technologies”, “Business accounting”, “International business management”, “Electronic business information technologies”.

## 1. Introduction

According to the Unified Electronic Database on Education [28], in recent years in Ukraine the specialty of management (in particular, international companies’ management, hotel, resort and tourist service



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management, urban management) is among the top 5 popular specialties. In 2018 the statistics of submitted applications by specialties is as: law – 45 191 (of which for the budget – 23 443); management – 32 377 (of which at the budget – 14 778); philology – 24 582 (17 728 of them at the budget); computer science – 21 674 (of which at the budget – 15 129); journalism – 19 796 (12 867 of them at the budget). In 2019, the management ranked 4 by the popularity among the applicants. Applicants plan to assimilate the profession mainly in the cities of Kyiv, Kharkiv, Dnipro, Lviv.

At the same time, the results of the analysis of vacancies from popular job search sites [29], [30] at October 18, 2019 indicate the necessity in managers, in particular, management staff – 49 vacancies, administrative staff – 316 vacancies, tourism managers – 212 vacancies.

Surveys of freshmen in the specialty “Management” demonstrate a rather general idea of candidates about their future functional responsibilities and the perception of the profession as purely managerial. Therefore, during the first two years of study, students experience disappointment and loss of motivation to learn the profession. Often, employers’ negative references on graduating students training, the constant large number of job vacancies at the labor market require the reconsideration of approaches to training managers in the higher education institutions.

At present, there is a necessity in reconsideration of the content of educational program, to approach the issue of organizing the training of future managers, managers of different business groups in a new way, and to modernize the teaching process. In our opinion, one of the ways to solve this problem is the introduction of professionally oriented information and communication technologies in the educational process.

## 2. Literature review

For our study, the importance of scientific work in two directions: 1) to analyze the level of training of modern managers, society's requests for the competencies of managers in the tourism and hotel and restaurant business; 2) to analyze on the problems of selection and implementation of professionally oriented ICT in the educational process in order to meet the needs of employers and clients by the level of professional training of specialists.

The opinion of scientists is convincing ([1], [3], [5], [6], [8], [9], [10], [12], [16], [20], [22], [25], [27], [31]) that the introduction of ICT in the educational process helps to increase the efficiency of future specialists.

Priority directions for tourism and hotel and restaurant business are being formulated in major forums, such as “ENTER 2020” – XXVII Annual International Conference on E-Tourism, held January 8-10, 2020 at the University of Surrey in Guildford, United Kingdom [18]. In particular, the conference presented the latest case studies on the use of ICT in travel and tourism. The reports of the 2020 conference are devoted to the topic “Responsible e-tourism”, they raised the issue of ensuring the positive impact of tourism on society, including, among the problems reflected the training of relevant specialists [11].

Among the scientific works of the first direction, it is necessary to pay attention to the article Aleksandr I. Dikhtyar “Innovation and information support in tourism” ([3], p. 81), in which the state and prospects of development of tourist industry in Ukraine are analyzed. One of the ways to increase its competitiveness is to improve information support from the state (introduction of bar codes in smartphones, 3D tours of hotel complexes and restaurants, etc.). The author argues that the development of the industry is not possible without the qualified training of experts, knowledgeable in ICT.

The continuation of the problem raised can be seen in the article by Elena V. Vasileva and Anna E. Terekhova “IT competences of the management director's graduate in accordance with actual labor market questions” ([27], p. 249), which outlines requirements for a modern specialist in the field of tourism and hotel and restaurant business. One of the solutions, the authors propose to introduce on the basis of the discipline “Management Information Systems” special courses in the study of software special products: “CRM-systems”; “SAP Enterprise Corporate Information Systems”, “Oracle Enterprise Corporate Information Systems”.

In the context of our research, among the works of a scientific and methodological nature, we take

into account are important the such positions. Until recently, a limited number of specialty products were used in the preparation of managers of the hotel and restaurant and tourism business: 1C, Parus, Galaxy, Scala, Axapta. The methodology for their implementation is described in the publications of Natalia V. Repetckaia ([23], p. 215), Olesia L. Dyshko, Tetiana V. Zubekhina and Nataliia B. Pavlyshyna ([5], p. 78). In particular, Natalia Riepietskaia based on the results of pedagogical experiment on implementation of software products of 1C company in the training of managers (1C: Accounting, 1C: Management of a small firm, 1C: Document management, 1C: Salary and personnel management) concludes that the effectiveness of training will increase significantly with the active use of active and interactive technologies such as computer simulations, training, review and resolution of industrial situations in professional activities, including role and business games. The greatest effect, according to the author, can be achieved by combining business games with the use of modern professionally oriented ICT based on cloud technologies [24], [26].

Semen V. Drozdov and Nadezhda I. Almazova [4] based on the questionnaire of teachers involved in the training of managers (in particular, the specialty "Tourism") concludes that it is advisable to expand the list of ICTs (e-learning platforms, Internet sites, multimedia presentations) with professionally oriented software. According to scientists, it will allow "to improve the quality of learning, to increase the efficiency of the educational process, to improve the methodology of content selection, methods and forms of education and upbringing, to activate the process of assimilation of information and to prepare future specialists for life in the conditions of the information society".

Andrii Lytvyn, Vitalii Lytvyn, Larysa Rudenko, Yuriy Pelekh, Oleksandr Didenko, Radosław Muszkieta and Walerij Żukow ([13], p. 602) covered the results of a pedagogical experiment that demonstrated that the use of ICT technologies in the training of skilled workers and the use of pedagogical software tools would solve the problem of matching graduates of higher education institutions to the needs of society.

Meanwhile, the issue of the use of professionally oriented software products in the training of managers (in particular, hotel, resort and tourist services) remains disregard. In our opinion, the study of this issue will help in forming of the professional competencies of future managers.

The article is devoted to the problem of implementation professionally oriented information and communication technologies into the process of professional training of managers.

### 3. Method

Methods of theoretical research were used: scientific works were analyzed on the topic to determine the degree of research of the problem; to study the list of competences and tools for their formation, the educational programs for the preparation of bachelors of the specialties "Tourism" and "Hotel and Restaurant business" were studied; textbooks and manuals for the disciplines studying the bachelor of the above specialties are analyzed to determine the topics to be followed by ICT.

From the methods of empirical research, the following were used: conversation with teachers to discuss the hypothesis of the experiment, to coordinate actions during the experiment; Student questionnaire to identify the level of ICT proficiency and the level of awareness of the importance of ICT in professional activity.

Methods of studying the products of students' activities (completed practical tasks, independent work, individual tasks, results of practice, participation in didactic games) were used to confirm the hypothesis.

A formative pedagogical experiment was conducted to confirm the hypothesis of the study.

### 4. Results of the research

Agreeing with the opinion of scientists that the introduction of ICT in the educational process favours the efficiency of training of future specialists, we emphasize the reasonability of using professionally oriented special software products in the professional education of students of each specific specialty.

In particular, the purpose of the training program for the training of management specialist is "to train specialists capable to solve practical problems and complex specialized issues in the field of

managing organizations of different types and forms of property and their units on the basis of acquisition of the system of professional competencies”, which is impossible without implementation in educational process of information and communication technologies ([4], p. 182). Such training will not only make the training innovative, dynamic, more interesting and closer to the realities of the profession, but also intensify it, will give to the students a real opportunity to acquire professional competences. The abilities of the World Wide Web and its resources (websites, e-mail, e-textbooks, encyclopedias, reference books, research portals, etc.) allow effectively organizing and conducting online conferences, seminars in chats and blogs, individual consultations using visual communication. The modern student is eager to join these and other well-known communication tools that turned into learning tools. In combination with e-resources used both in the lectures and in independent work, they provide the formation of necessary for the successful manager’s professional activity complex of professional competencies.

Having regard to the specifics of future profession, the implementation of ICT in training of managers is considered from different positions: first, it allows to intensify the educational process, make it dynamic, modern, interesting, and secondly, the introducing of students with the software that used in management (by specialization), application of imitation methods of working with them, fulfillment of case calculation tasks, implementation in the educational process of didactic games with the using of ICT capabilities allow to form for students the necessary in future professional activities competencies, introduce into the specifics of the profession and give a real idea of the specialty.

ICT shared to the general and professionally oriented. In the educational process of modern higher education institutions, common ICT (teleconferences, forums, chats, search systems (websites, web directories), online educational environments) have become its integral part. For most modern educators, some of the ICT that have until recently been perceived as innovations are now in the phase of becoming as customary and the everyday learning tools such as e-mail and multimedia presentations. With the help of Moodle in many countries of the world, including Ukraine, thousands of LMS training systems have been created with educational courses sited on them. Lecturers and students from many Ukrainian universities consider in the project system of management education Moodle the wide variety of opportunities to full-fledged implement the online educational process. Iryna M. Naumuk and Natliia I. Korzun describe the experience of introducing a distance learning system in the process of training computer science teachers at Melitopol State Pedagogical University named after Bohdan Khmelnytsky ([17], p. 72). The experience of tutors in this institution of higher education is discussed in the article by Kateryna P. Osadcha “New opportunities for organizing the activities of a distance learning tutor in Moodle 3.2” ([19], p. 30). Iryna S. Mintii in article “Using Learning Content Management System Moodle in Kryvyi Rih State Pedagogical University educational process” describes the experience of implementing blended learning at the Kryvyi Rih State Pedagogical University [15]. Fifteen years of experience in the implementation and operation of the Moodle platform has O.M. Beketov National University of Urban Economy in Kharkiv.

The specificity of each individual specialty has an arsenal of necessary software products, the use of which at the stage of training specialists of a particular specialty ensures the formation of their professional competencies. The functions of manager (administrator, member of administrative staff, organizer, head, and superintendent) can be tentatively divided into 5 sectors: planning, organization, management, control, representation ([5], p. 77).

For the effective solving of professional issues in management sector modern managers need to be able to work with information technologies of office tasks automation, corporate information systems, and reference legal information systems. Therefore, in the basis of the training of managers should be the learning of information technologies of office tasks automation, such as processing of input and output information, collection and analyzing data, creating reports, searching information etc. Microsoft Office is an integrated suite of programs that generally meets the assigned tasks: provides work with a text editor, spreadsheets, database management system, communication tools, and graphical editor. In order to be competitive and demanded at the labor market, a modern manager must have a sufficient level of specialized professional skills: the ability to create and organize effective communications in

the management process; estimate the markets of products and services at the regional, national and international context; to organize and manage business; to make budgets of organizations and to control their implementation, etc. Now in management for automation of operational accounting of financial and economic activity of the enterprise the programs 1C, Galaxy, Parus, Skala are implemented, which in higher education institutions use for formation of information and communication competencies for future managers. Thus, in the 1C set managers are getting know to 1C: Accounting, 1C: Document management and other varieties of the program. But the functional responsibilities of the manager are much broader. Based on the analysis of the functional responsibilities of a modern manager and the list of competencies that a graduate manager should have, we have identified professionally oriented software products, such as MS Project, Teamwork, TeamLab, Open Workbench, GanttProject, dotProject, Outlook, OneNote, EverNote, Nirvana, Wunderlist, Toggl, MS Office, Office 365, Document.Online, AllFusion Process Modeler 7, MS Visio, MS PowerPoint, MS Sway, Libre Office.Impress, FreeMind, Mind42, ViSta, MacANOVA, Matrixer. Also included are special software products for managers of hotels, resorts and tourist services. Their implementation in the process of training managers will be discussed in detail at [2], [7], [11], [21].

The specific software products that manager should be able to use have been divided into five sectors, according to the main functions of the manager. Table 1 shows the correspondence of the manager's functions with professionally oriented software products, the use of which, in our opinion, will contribute to a more efficient performance of functional duties.

**Table 1.** Manager functions software.

Function	Computer program
Planning	MS Project, Teamwork 2.0, Open Workbench, GanttProject, DotProject, Wunderlist, XMind, Freemind, MindNode, Bubble.us, MindMeister, Mapul, WiseMapping, Mindomo
Organization	TeamLab CRM, OneNote, Evernote, Nirvana, Wunderlist, GitHub, Trello, AllFusion Process Modeler, FreeMind, XMind, Freemind, MindNode, Bubble.us, MindMeister, Mapul, WiseMapping, Mindomo
Management	Nirvana, Google Docs, DotProject
Control	Microsoft Excel, Microsoft Excel Services, DotProject
Presentation	PowerPoint, Prezi, Sway

The capabilities of these computer programs will be analyzed below.

1. Software that helps planning in management gives an opportunity of planning the working hours rationally, the creation of notepads with timer to remind, preparation of business plans, etc. Identifying the types of work and human resources, the distribution of work stages and responsibilities by executors, risk prediction are all invaluable benefits of using computer programs at the planning stage. The ability to use graphs makes the project visual and demonstrative. Equally important is to maintain a dialogue with colleagues.

2. Organization of work (own or collective) – no less important part of the manager's work. It provides for interaction with colleagues, customers, management, subordinates, and, taking into account the specialization of the manager (for example, sales manager), the organization of specific activities. Most of the presented software products allow forming a united database of clients and contractors contacts, to collect information about them, to coordinate contacts efficiently, and also to control work with each client of each worker.

3. In project management, the manager uses Basecamp, FogBugz, dotProject systems. Using Web2project, which is a variation of dotProject, allows creating an effective, interactive way to manage projects and tasks.

4. It is reasonable to use Excel to control the calculation operations, which allows inputting formulas, constructing diagrams, graphs for reports and presentations.

5. PowerPoint, Prezi, Sway programs allow to fulfil the presentation function. The capabilities of these programs to present visually the information with graphs, diagrams, tables, moving objects (zoom-in and out), involvement video and audio materials will help the manager to present a report, lecture, make a presentation etc.

An analysis of higher education standards, educational and professional training programs for specialists in this specialty showed that the study of the above Microsoft Office software products is provided for by the educational program for training student managers in all universities of Ukraine.

According to the hypothesis of the study, for two years (2017–2019) the introduction of professionally oriented ICT in the educational process will increase the ICT competence of future professionals in the field of tourism and hotel and restaurant service. To form the information and communication competences of 1-3 courses students of the specialty “Management of hotel, resort and tourist service” on the basis of O. M. Beketov National University of Urban Economy in Kharkiv and Alfred Nobel University the pedagogical experiment was carried out. It was attended by 26 teachers involved in the educational process with students of these specialties and 284 students (12 academic groups of students of different courses of three specialties). At the beginning of the pedagogical experiment, a pilot study was carried out, which showed that 24% of 2-3 year students have no experience of working with professionally oriented software products.

Meantime, in the discussions with the lecturers of the disciplines “Information Systems and Technologies”, “Practices on Information and Communication Technologies”, “Statistics”, “Management and Administration”, “Finance, Money and Credit”, “Accounting and Auditing”, “Business Foreign Language”, “Professional Rhetoric”, “Foreign Professional Language”, “PR and Advertising Technologies”, “Business Accounting”, “International Business Management”, “E-Business Information Technologies” on topics and content of disciplines it is clear that within their limits in is the possibility of acquaintance and work with such a special software products as Servio, Ultra-restaurant, Quick Resto, Jowi, Tillypad, R-Keeper, Resti, POS Sector besides the work with 1C, Sail-restaurant products that are provided by educational programs.

At the ascertaining stage of the experiment, the teachers participated in the conversation, the students – in the questionnaire. During the conversation with the teachers of the profile disciplines, they learned the level of their knowledge of ICT, the list of disciplines on which these technologies were implemented, the software products they use in the educational process.

Teachers analyzed the curriculum, identified the disciplines and topics for which the use of professionally-oriented ICT is planned. The components for the formation of ICT-oriented competencies are identified:

1. The target component contains a list of knowledge, skills in working with programs and databases, information services on the Internet and their impact on success in the professional field.
2. The Content Component provides an ICT competency-based curriculum.
3. The technological component contains the technology of formation of ICT competence in the study of disciplines using the ICT technologies of future specialists of the tourism and hotel and restaurant business.
4. Diagnostic component provides diagnostics of the learning process, which allows quick response to deviations in the process of formation of ICT competence.
5. The result component contains the criteria for the formation of ICT competence of specialists.

During the forming part of the pedagogical experiment, measures were taken to develop the ICT competences of students of the specialty “Tourism” and “Hotel and Restaurant Business”. According to the results of the questioning of students, 2 groups were created: EG (experimental) and CG (control). The questions of the questionnaire were aimed at finding out knowledge about professional software products from ICT. The responses to the questionnaire were analyzed. The students received approximately the same answers. There was no special selection in the EG and CG. Under the conditions of the experiment in EG, the classes were conducted using professionally oriented ICT, in the control room – a regular office suite with Microsoft Office applications, which gives the opportunity to work with texts, tables, diagrams and more.

The essence of the pedagogical experiment was to introduce in the process of training of students from the experimental group (hereinafter referred to as EG-1) of specialty “Management of hotel, resort and tourist service” the professionally oriented software products. In the control group (CG-1) acquaintance with professionally oriented software products did not go beyond the bounds of program material.

Teachers actively involved EG students in e-textbooks, electronic correspondence, teleconferences; conducted classes using multimedia systems, computer aided design (CAD) systems, electronic library catalogs, banks and databases. According to the experiment of interactive classes in EG using professionally oriented software products, more than 20% of the total number of class hours were spent than in CG. EG and CG students have studied the technical means (personal computer, peripherals, storage media) and software (word processors, graphic editors, editorial and publishing systems, spreadsheets, information security systems); have learned how to search for information on the WAN, organize their own work using fax, email, teleconferencing, LAN, and more.

During the design experiment, the EG students were additionally familiarized with 22 software products. During the practical classes and during the internship, EG students are given the opportunity to improve their ability to plan, organize and manage the work of the departments, as well as to exercise leadership and representation functions.

Particular attention was paid to the implementation of professionally oriented ICT in teaching the disciplines of the elective part of the educational program: International Business Management, Business Communication, Brand Management, Communication Management. Practical classes were held in specialized computer rooms using modern information and communication equipment, information systems and software products used in management. Each discipline of the curriculum is provided with a teaching methodological complex and a distance course.

All EG students and teachers are registered with Microsoft resources and have corporate accounts. This gives them access to an expanded suite of cloud services, as well as to most Microsoft licensed products (more than 100 items).

During the experiment, EG-1 students were involved in active and interactive forms of studying, one of which was the business game. The simulation of production situations at different stages of work is the basis of the game. As the pedagogical experiment demonstrated, the studying of the disciplines referred above using ICT at the organization of training in the form of business games is more effective, and also contributes to the formation of information and communication competencies of future managers.

In the course of the pedagogical experiment, most of the programs were used with the application of three levels of cloud services: application as a service (SaaS), platform as a service (PaaS) and infrastructure as a service (IaaS) [14]. Owing to the using of cloud technologies during the experiment, students received the experience of working with current versions of software products, had unlimited access to the information base, and teachers were able to connect to student bases, control their activity, set the parameters of use of service. That targeted EG-1 students on self-dependence in work.

As a result of the pedagogical experiment, EG-1 students were able to work out mass and individual mailing of advertising information about the institution, personal and corporate invitations to institution events; control of the progress of tasks, stages of its fulfillment; compilation of statistics from different institutions in real time; control over the institution's incomes, fulfillment of functions and assignments by employees, terms of orders execution; connection with payment terminals; automatic adjustment of filling in the contracts and other documents; quality assessment of manager's work through the sites, SMS-polls, automatic voting of the guests of the establishment; video protocols from virtual security cameras; became acquainted with the rules of ensuring the safety of clients and, if necessary, the anonymity of their residence in the institution; programming of backup schedules and getting the reports, as well as data backup, automatic archiving. EG-1 students also had the opportunity to become acquainted with the system of face recognition at the entrance to the hotel and restaurant both as VIP clients and unreliable payers. During the practice lessons, they practiced in ordering goods and services for visitors through the mobile application. Taking into account positive opinions of the restaurateurs,



the cloud-based Poster accounting system was used during the pedagogical experiment. Students had the opportunity to get acquainted with its advantages (access to statistics, structure and finances of the restaurant business; easy installation and usage; independence from the Internet) during the practical and laboratory lessons, as well as during the practical training.

Table 2 presents the criteria for the formation of ICT competencies of students in the experimental and control groups at the ascertaining and control stages of the experiment. It displays the results of a pedagogical experiment in groups.

**Table 2.** Criteria and indicators of the level of formation of ICT competencies in students of the EG and CG.

Criterion	EG (140 students)		EG (144 students)	
	Statement stage	Control stage	Statement stage	Control stage
The ability to search, collect and analyze professionally important information	108 (77%)	132 (94%)	96 (66%)	113 (78%)
The ability to carry out calculations of indicators to justify management decisions	34 (24%)	96 (68%)	32 (22%)	78 (54%)
The ability to apply management methods (using computer programs and products) to support the organization	42 (30%)	76 (54%)	46 (32%)	62 (43%)
The ability to teamwork, leadership, teamwork	48 (34%)	72 (51%)	40 (28%)	56 (39%)
The ability to analyze production situations using professional software products	23 (16%)	62 (44%)	30 (21%)	44 (31%)
The ability to communicate in various fields of professional activity	74 (53%)	110 (79%)	78 (54%)	92 (64%)
The ability to propose business ideas using computer software products	34 (24%)	56 (40%)	30 (21%)	42 (29%)
The ability to develop business plans using computer software products in Ukrainian and foreign languages	36 (26%)	62 (44%)	34 (24%)	48 (33%)

The criteria and indicators of the formation level of professionally-oriented ICT competencies are based on program learning outcomes: ability to search, collection and analyzing information, calculation the indicators to justify management decisions, to applying management methods to ensure the effectiveness of organization activities, to demonstration interaction skills, leadership, team-work, to substantiation of effective tools of motivation of the personnel of the organization, to the analyzing the situation and implementation of communication in different areas of organization activity, the formulation of business ideas, design and implementation of business plans in Ukrainian and foreign languages using professional-oriented software. Particular attention was paid to the language competence of students, as well as the ability to reason when presenting business projects. The criteria and indicators are based on the main competencies of the future manager, which are indicated in the training and professional program.

It should be emphasized that in the EG and CG students were united on the principle of academic groups.

At the ascertaining stage of the experiment, the students of the EG and the CG showed approximately the same abilities according to the stated criteria.

The difference between the ability to search for any information and information of a professional nature is established. Students of both groups during their studies at school and university look for the necessary information on the Internet and in other sources. They use the information they receive to

prepare for the Seminar classes, exams, practical and laboratory work, and course projects. During their participation in the pedagogical experiment, students from the EG and CG improved their ability to search and use professionally relevant information. The growth of indicators by this criterion in the EG is 17%, in the CG – 12%. It was achieved by introducing such software products into the training of managers: Freemind, MindNode, Google Docs.

The following criteria were obtained for the criterion “Ability to carry out calculation of indicators for substantiating managerial decisions”: at the ascertaining stage, the EG consisted of 34 students (24%), the CG – 32 students (22%). At the control stage, the number of EG students owning this property increased by 44%, in the CG – by 22%, which is also a good result. Introducing Open Workbench software into teaching, XMind, Freemind, Microsoft Excel, Microsoft Excel Services, contributed to the formation of these competencies. A large number of practical classes in accounting, finance, management, and other professionally oriented disciplines in the EG were held in an interactive form using these programs.

According to the criterion “Ability to apply management methods (using computer programs and products) to support the organization” at the beginning of the experiment, we have low formation indicators in both groups. This is due to the narrow specificity of knowledge that students acquire directly at the university. The basis of such knowledge is the beginning of analysis, higher mathematics. But students learn to apply management methods effectively only when becoming acquainted with software products: Process Modeler, Mindomo Nirvana, Google Docs, DotProject. About one third of students at the beginning of the experiment at a sufficient level could carry out managerial activities. At the end of the experiment, we have 54% in the EG and 43% in the CG, which is respectively 24 and 11% higher than at the beginning.

The ability to work in a team, leadership qualities are very important components of the competence of a modern manager. Therefore, during the experiment it was important to track the dynamics of this criterion. In the formation of these qualities, students play a large role in active and interactive forms of conducting classes: didactic games, solving industrial situations, problem learning. Software products that allow the manager to implement the management and control functions of MS Project, Teamwork 2.0, Open Workbench, GanttProject, DotProject, Wunderlist, XMind, Freemind, MindNode, Bubble.us, MindMeister, Mapul, WiseMapping, Mindomo, Microsoft Excel, Microsoft Excel Services, DotProject play a big role. According to this criterion, we have an increase of 17% in the EG and 11% in the CG.

The greatest results were obtained according to the criterion “Ability to analyze production situations using professional software products.” This is explained by the high degree of motivation of students in the study of narrow disciplines. EG students increased their competencies from 23 (16%) to 62 (44%), while the students of the CG showed the results of 30 (21%) at the ascertaining stage and 44 (31%). in the EG the growth was 28%, in the CG - 10%.

According to the criteria “Ability to offer business ideas using computer software products” and “The ability to develop business plans using computer software products in Ukrainian and foreign languages”, students had the opportunity to improve their competencies during the defense of course projects, participation in scientific events (for example, student research contests), work on grants and other commercial projects. By these criteria, not all students can offer business ideas and implement them. But the criteria are important for a successful modern manager. Only 9% of students in the CG were able to increase performance by these criteria. In the EG, this indicator is 18%, which is 2 times more than in the CG.

Generalized indicators of the levels of formation of professionally oriented information and communication competencies of students EG-1 and KG-1 in the specialty “Management of hotel, resort and tourist services” are presented in table 3. The table indicators show a significant decrease in the number of students in the EG and CG with a low level of formation of ICT competencies. It should be emphasized that in the EG after the pedagogical experiment, the number of students with high-level ICT competencies has grown. After the pedagogical experiment, the indicators of ICT formation in the EG increased by approximately 40%. These indicators in the CG increased within 20%.

**Table 3.** Results of pedagogical experiment.

Level	Control group				Experimental group			
	Stage the experiment							
	Ascertaining		Control		Ascertaining		Control	
	number	%	number	%	number	%	number	%
High	94	66	64	45	96	67,6	84	59
Satisfactory	32	22,5	50	35	28	19,8	37	26
Low	16	11,5	28	20	18	12,6	21	15

## 5. Discussion and conclusion

The aim of the study was to prove the effectiveness of the implementation of professionally oriented software products based on ICT in the training of managers. According to the hypothesis of our study, the introduction of special professional software products based on ICT into the training of managers of the hotel, restaurant and tourism business contributes to the formation of students at a higher level of professional competencies, in particular, information and communication.

The conducted pedagogical experiment confirmed the hypothesis of the research. The following conclusions were made:

1. The introduction of licensed software products of Microsoft Corporation into the educational process is not enough for a modern manager of the hotel and restaurant and tourism business to fulfill his functional duties at a high level. Therefore, it is necessary to include special software products in the training of specialists, taking into account the specifics of the future work of students. We consider as such for specialists of the hotel, restaurant and tourism business: MS Project, Teamwork, TeamLab, Open Workbench, GanttProject, dotProject, Outlook, OneNote, EverNote, Nirvana, Wunderlist, Toggl, MS Office, Office 365, Document.Online, AllFusion Process Modeler 7, MS Visio, MS PowerPoint, MS Sway, Libre Office.Impress, FreeMind, Mind42, ViSta, MacANOVA, Matixer.

2. The list of disciplines, in the study of which it is possible to use professionally oriented ICT and software products, was compiled on the basis of an analysis of educational standards, educational and professional training programs for a particular specialist. Those for the specialty "Hotel and restaurant and tourism business" are "Information systems and technologies", "Practices of information and communication technologies", "Statistics", "Management and administration", "Finance, money and credit", "Accounting and audit". "Business foreign language", "Professional rhetoric", "Foreign professional language", "PR and advertising technologies", "Business accounting", "International business management", "Electronic business information technologies".

3. Taking into account the conditional division of the main functions of a manager (management, leadership, analysis, control, presentation), it was established that it is advisable to use certain software products and ICTs for the formation of professional competencies in practical classes and in students' independent work.

4. The development of computer technologies requires constant updating of knowledge about them, primarily on the part of teachers. Therefore, teachers involved in the process of training managers should systematically monitor innovations in professionally oriented ICT and constantly improve the educational and methodological support of disciplines, identifying topics, the content of which will contribute to the formation of students' competencies in the field of ICT. The electronic platform Moodle provides great opportunities in this. It allows you to:

- to use elements of cloud technologies;
- provide access to the software for the restaurant business (Servio, Ultra-restaurant, Quick Resto, Jowi, Tillypad, R-Keeper, Resti, POS Sector);
- to introduce simulation technologies, didactic, business and role-playing games in the process of training managers of the restaurant and tourism business in order to form competencies in the field of ICT.

An analysis of the development trends of the tourism and hotel industry recently reveals promising new aspects of scientific research. They relate to economic, social, psychological, pedagogical issues.

For pedagogical science, the study of the professionally important qualities of modern managers remains important and promising. Closely connected with this is the issue of expanding the competencies of future managers during training at the university. Considering that not only developed professional, but also general competencies are important for the manager's personality, promising areas of our further research may be studying the possibilities of introducing software products into the educational process to form the cultural and social competencies of managers.

So, the introduction of software products with ICT in the process of training managers shows positive results in the formation of professionally important competencies. Therefore, after a while there is reason to repeat the experiment, taking into account the expansion of the manager's functions and the emergence of new computer technologies, introducing new software products into the manager's educational process.

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