

## ANALYSIS OF DATA REGARDING PHARMACEUTICAL LIFELONG LEARNING PROGRAMS IN ROMANIA. PREREQUISITES AND OUTCOMES.

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### Abstract

Our study presents an analysis of the results obtained by implementing an e-learning platform through a project dedicated to continuing education of pharmacists, a project that took place nationwide over a period of two and a half years.

We also intended to present the key aspects of implementing a strategic project dedicated to the development of human resources (Sectoral Operational Programme for Human Resource Development), project that was developed as a result of the partnership between the University of Medicine and Pharmacy "Carol Davila", the Romanian College of Pharmacists and Siveco Romania SA.

The analysis focused on two directions of interest: demographic issues related to age, gender and area of residence of the participants, the second direction being given by the interest and level of training of participants in organized training modules through this project.

### Rezumat

Obiectivul acestui studiu a fost de a prezenta rezultatele unei analize a necesității implementării unei platforme de *e-learning* în urma derulării unui proiect dedicat educației continue a farmaciștilor, proiect care s-a desfășurat la nivel național pe parcursul unei perioade de doi ani și jumătate.

Ne propunem, de asemenea, să prezentăm aspectele esențiale ale implementării unui proiect strategic, dedicat dezvoltării resurselor umane, (Programul Operațional Sectorial de Dezvoltare a Resurselor Umane), proiect realizat ca urmare a parteneriatului dintre

Universitatea de Medicină și Farmacie "Carol Davila", Colegiul Farmaciștilor din România și Siveco SA.

Analiza efectuată a urmărit două direcții de interes: aspectele demografice, care se referă la vârsta, genul și zona de domiciliu a participanților, cea de-a doua direcție fiind dată de interesul și nivelul de pregătire al participanților la modulele de pregătire organizate prin intermediul acestui proiect.

**Keywords:** strategic project, *e-learning* platform, training courses for pharmacists, ICT (information and communication technology)

### **Introduction**

This study presents an analysis of the results obtained by implementing an e-learning platform through a project dedicated to continuing education of pharmacists, a project that took place nationwide for two and a half years.

The key aspects of implementing a strategic project dedicated to the development of human resources (Sectoral Operational Programme for Human Resource Development) were presented [1]. This project was developed as a result of the partnership between the University of Medicine and Pharmacy "Carol Davila", the Romanian College of Pharmacists and Siveco Romania SA.

The two directions of interest of the study were: demographic issues related to age, gender and area of residence of the participants, the second direction being given by the interest and level of training of participants in organized training modules through the project.

### **Materials and Methods**

The project started with the generation of the idea along with getting the data and completing its funding application required, activities which required a period of about two years. During this period of work, we began by writing the application form, which was based on a detailed study of the training needs of pharmacists, the legal framework in which the training was performed, the structure of the partnership and have established the implementation stages (periods and locations).

The project preamble was the application form approved on a legal basis which included both the programs and the European Commission (EC) regulations which assess general provisions for the European Regional Development Fund, European Social Fund and the Cohesion Fund and also the government ordinance regarding financial management of Structural tools and their use for the Convergence objective, other orders of the finance minister, completed with applicable EC and national rules [2].

The design for the lifelong learning training programs consists in a diverse topic: healthcare management and pharmaceutical specific

legislation, information and communication technology initiation and pharmaceutical-specific programs: clinical pharmacology, pharmaceutical technology, applied pharmaceutical marketing and information and communications technology impact on pharmaceutical activity (case studies, technology presentations, comparative analysis of how technology influences the development of pharmaceutical activity).

The three partners in this project were: the applicant, which was the University of Medicine and Pharmacy "Carol Davila", the first partner was the College of Pharmacists of Romania and the second partner was SIVECO SA.

The applicant, "*Carol Davila*" University of Medicine and Pharmacy, has developed a reputation in the projects implemented and funded by various non-budgetary financing lines. It had a role in generating the idea of the project, but also in the management activities and participation of its teaching and research staff. For this purpose, significant human resources (management team, key experts, lecturers for pharmaceutical education classes) and important material resources were assigned.

The first partner, Romanian College of Pharmacists, generated the idea of the project, being also the professional organisation for the targeted group. For pharmacists, lifelong learning is a mandatory component of their professional activity. The premises are determined on the one hand by the legal aspects (Law 95/2006, Title XIV) and on the other hand, by the objective necessity of constant information on different domains: clinical pharmacology, pharmaceutical management, new technologies used in drug production, modern marketing techniques or the use of information and communications technology (ICT). The College of Pharmacists of Romania, as the professional organisation of pharmacists, has a great experience in initiating, promoting, organizing and accrediting pharmaceutical lifelong learning programs, with the aim of increasing the professional competency of pharmacists. The National College is equally authorized to provide lifelong learning programs to pharmacists nationwide. Its role in this partnership was extremely complex, involving both the management level, and the implementation of activities in order to provide training and logistical issues, but also promoting all the activities, as well as supporting the human, material and financial resources needed.

The second partner was Siveco SA, which provided the e-learning platform and supported the lecturers in their teaching activity provided on online basis, being a supplier for interactive courses and didactic materials in multimedia format, with inovative structure using ICT technologies. Siveco SA was involved in the idea generation of the project, the project

management and the implementation of all its activities, including the creation of a web portal through which multimedia teaching materials will be made available to the target group of pharmacists and will accompany the classic format.

The project's main goal was to increase the level of adaptability of pharmacists in the context of the introduction of new technologies, including ICT and new forms of management in their work activities [3].

The specific objectives were: increasing the ability of pharmacists to work with toxic or dangerous substances; achievement of a correct management of the use and storage of toxic substances and environmental protection; increasing the adaptability of managers working in the pharmaceutical field [5]; increasing the adaptability of pharmacists to new technologies, including ICT and its impact on the exercise of their profession.

The project also intended to promote the principle of equal opportunities and non-discrimination in the workplace by conducting an information campaign on these issues.

The most important indicator for the targeted group was the total number of participants, and we decided that the group will consist of over 1000 pharmacists, who work in all areas applicable to the profession of pharmacy: drugs distribution, urban or rural pharmacies and production laboratories, hospital pharmacies, universities, pharmaceutical multinational companies, but also, retired pharmacists, unemployed pharmacists, etc.

There were provided three types of programs:

1. Training program in health management
2. Initiation program in ICT
3. Training programs for pharmacists in new technologies.

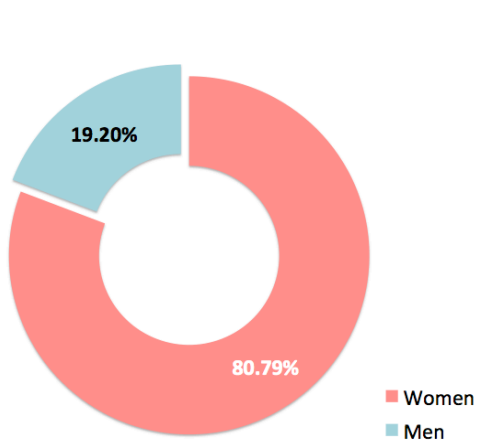
The third category of programs consisted in courses of applied pharmaceutical technology (program targeting familiarity with new technologies in the field), the use of new technologies in clinical pharmacology (this program discusses the latest technology used worldwide in clinical pharmacology), and pharmaceutical marketing and communication in the IT era (the program presented new methods of specific informatic programs and communication tailored to the IT technology and information society), The Impact of ICT on the pharmaceutical activity (case studies, technologies presentations, comparative analysis regarding the influences on the development of pharmaceutical activity [6]).

**Results and Discussion**

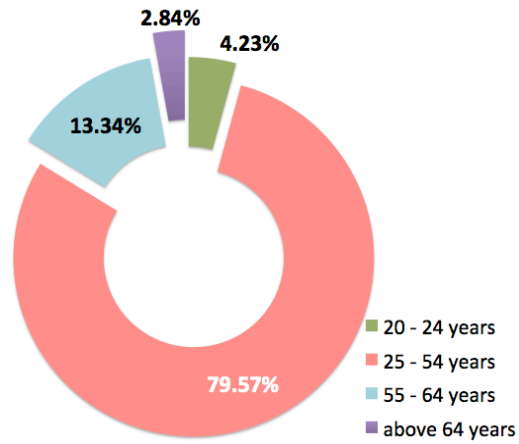
The goal achievement indicators were: participation in lifelong learning education programs of a total of 1,000 pharmacists and 100 pharmacists in pharmaceutical management program, 70 of which were women.

The number of pharmacists who participated in the training programs exceeded all indicators, proving both the utility and their interest in lifelong learning activities [4].

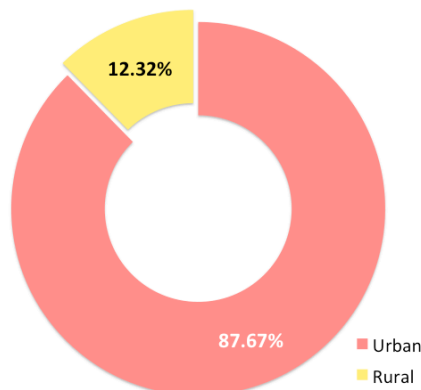
The demographic analysis pointed out the results depicted in the following figures.



**Figure 1**  
Structure of the targeted group by gender



**Figure 2**  
Age groups of the targeted group



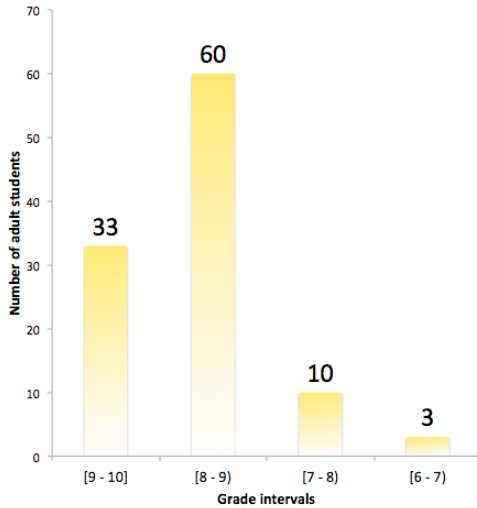
**Figure 3**  
Area of residence of the participants

**Table 1**  
The rate of participation was analysed by city of residence

County	Number of participants	County	Number of participants
Alba	4	Gorj	6
Arad	12	Harghita	5
Arges	17	Hunedoara	3
Bacau	7	Ialomita	3
Bihor	3	Iasi	81
Bistrita Nasaud	2	Ilfov	17
Botosani	8	Maramures	17
Braila	5	Mehedinti	2
Brasov	112	Mures	237
Bucuresti	437	Neamt	6
Buzau	8	Olt	5
Calarasi	2	Prahova	10
Caras-Severin	1	Satu Mare	5
Cluj Napoca	41	Sibiu	3
Constanta	67	Suceava	9
Covasna	3	Teleorman	1
Dambovita	6	Timis	25
Dolj	29	Tulcea	3
Galati	7	Valcea	4
Giurgiu	4	Vaslui	4
		Vrancea	10

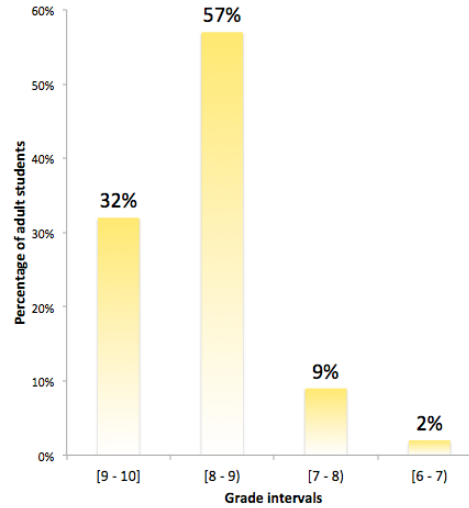
We obtained interesting results studying the evaluation grades, on 6 series of participants (from Bucharest – 4 series, Cluj and Iasi– one series each, for the Pharmaceutical Management program (106 participants):

- 33 participants were graded between 9 and 10 (10 was maximum), which represents 32 % of a total of 106 participants.
- 60 participants (57%) were graded between 8 and 8.99;
- 10 participants (9%,) were graded between 7.00 -7.99
- 2% (3 participants) were graded between (6.00 -6.99).



**Figure 4**

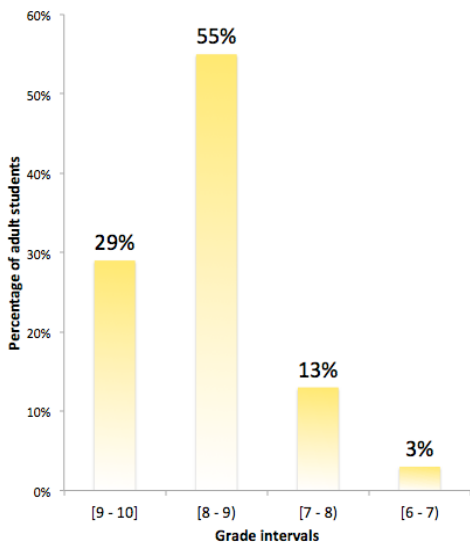
Test results in number of adult students



**Figure 5**

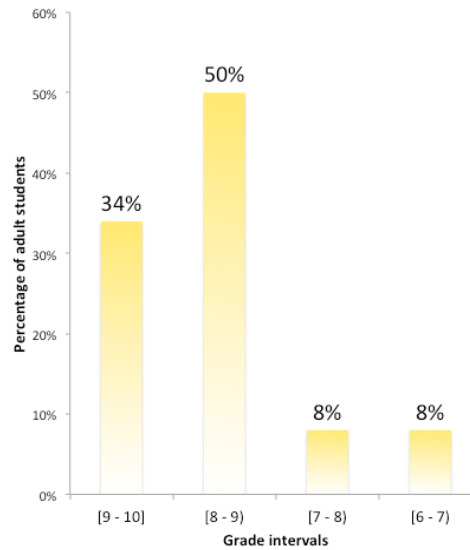
Test results in percentage of adult students

The grades obtained for every course are detailed in the following figures.



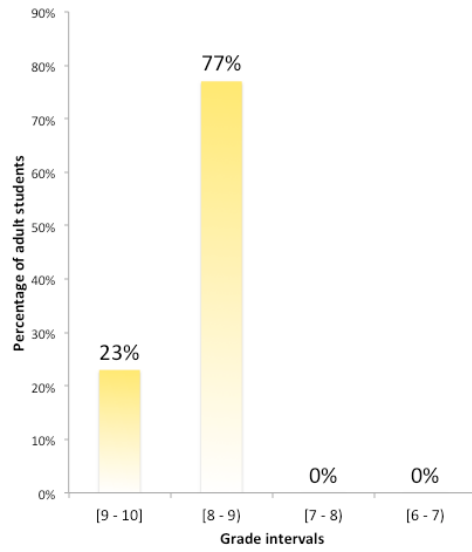
**Figure 6**

Test results in percentage of adult students in Cluj-Napoca

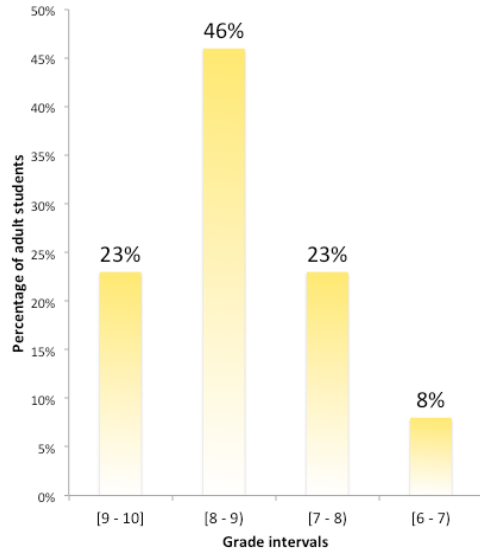


**Figure 7**

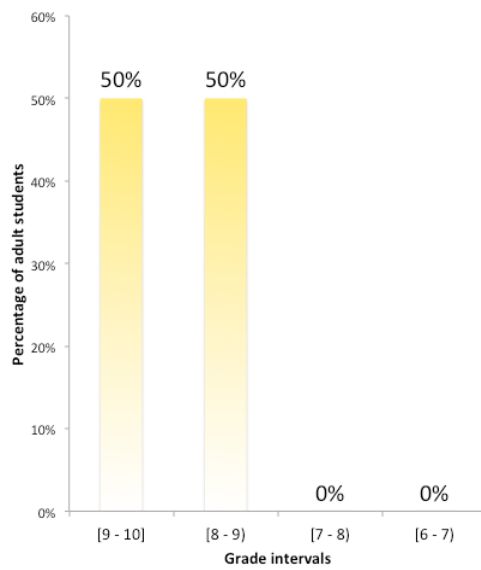
Test results in percentage of adult students in Bucharest (series 1)



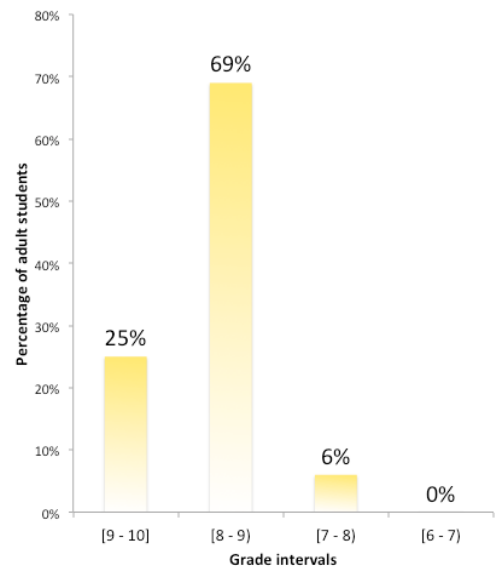
**Figure 8**  
Test results in percentage of adult students in Bucharest (series 2)



**Figure 9**  
Test results in percentage of adult students in Bucharest (series 3)



**Figure 10**  
Test results in percentage of adult students in Bucharest (series 4)



**Figure 11**  
Test results in percentage of adult students in Iasi

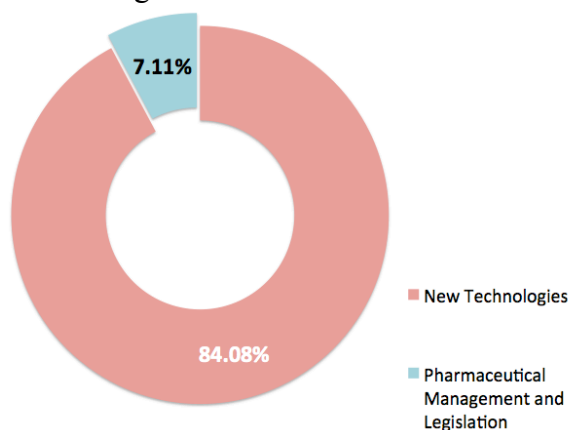


All the programs have received accreditation from the Romanian College of Pharmacists (20 lifelong learning credits each). Furthermore, the ICT initiation program (which included lectures on using a word processor, a spreadsheet application and a presentation graphics program) has received accreditation from the National Centre for Adult Training (*CNFPA*).

Upon completion, the web portal will be available for the university so it could be used further on the pharmaceutical lifelong learning education courses. If these courses will be accredited by the College of Pharmacists of Romania, will enable all pharmacists to have access to training programs without being forced to follow a mandatory schedule with displacement to a fixed course location. Instead, these courses can be covered from any location in an online system, over a period of time that can spread between 4 to 8 weeks.

The goals' achievement indicators were: participation in the lifelong learning education programs of a total of 1,000 pharmacists (750 of which women) and 100 pharmacists (70 of which women) in the pharmaceutical management program.

The adult student ratio certified in pharmaceutical management and the ratio of certified adult students that updated and improved their skills through organized programs in pharmaceutical lifelong learning education project are presented in figure 12.



**Figure 12**

Percent of adult students that updated and improved their skills through organized programs

## Conclusions

The human resource development project for pharmacists managed to achieve and even exceed all the indicators that were originally proposed, both in terms of the number of adult students (structured on age, gender or

residence) certified in pharmaceutical management, but also in terms of the skills improvement in using new technologies, as it was shown in the graphs presented before.

All initial objectives were met – managers were enabled to train in the pharmaceutical field, and also pharmacist were trained through specific programs (health management) or other programs of general interest (applications for new technologies in the pharmaceutical field).

The sustainability of the project through the web portal was achieved, making it possible for pharmaceutical education courses to be posted and accredited by the Romanian College of Pharmacists, allowing non-discriminatory access of all members of the professional community, regardless of the environment in which they operate (rural or urban), the work schedule, whether unemployed, on sick, postnatal or parental leave.

### Acknowledgements

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