

Retraining Citizens of Age Groups as a Tool of Social and Labour Adaptation

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Abstract—The article discusses some aspects of the Russian government's program to retrain or train so-called pre-retirees. It is emphasized that the trend of population ageing is observed almost everywhere, especially in European countries, so the issue of retraining able-bodied age citizens is quite relevant and non-trivial. It is suggested that a similar program of professional knowledge should be developed at the state level for those who have already reached retirement age. The article speaks about the potential of higher education institutions as a basis for the implementation of retraining of working citizens close to retirement age. The best, in our opinion, forms of presentation of material in training courses are considered. The experience of such courses for senior university staff is described. It is proposed on the basis of expert assessments and fuzzy logic methods to develop an expert system for the selection of training courses and the method of training.

The conclusion provides some proposals to optimize ways to solve this problem, such as the creation of a federal database that stores information about educational platforms, courses in vocational retraining, and the degree of demand for new occupations in the labor market; pre-electronic testing of applicants taking into account psychosocial factors and others.

Keywords: *training courses, pre-retirees, fuzzy logic, retraining, social adaptation, university opportunities*

I. INTRODUCTION

The state-sponsored vocational training and retraining program for pre-retirement citizens was launched, caused by the need for social and labor adaptation of this group due to the increase in the retirement age in Russia. This measure is designed to ensure the demand of the named contingent in the labor market, to be competitive and interesting to a potential employer.

About 450,000 citizens-pre-retirees will be involved in the retraining program, and an important condition is to guarantee the preservation of jobs for those who have been retrained or those who have acquired new professional competencies [1]. Activities to improve skills and receive additional vocational

education are carried out at licensed educational venues, which have received this right on a competitive basis.

For example, the Novosibirsk State University of Economics and Management offers a wide range of courses, starting with management in various fields (effective manager; management in hotel service, restaurant and tourism; director of marketing) and ending with courses in information technology (copywriting; blockchain as a tool for business sustainability; organization of information space in the digital transformation of enterprises; automated accounting System 1C: Enterprise 8.3).

According to preliminary data, the most popular courses were on improving computer literacy, office, economics and accounting. Also, according to information from the regions, it is a security business, entrepreneurship, sales, educators, junior medical staff, business, technical professions.

The problems of selecting a course on preference and level are solved by specialists of employment centers with the help of a sufficiently serious test, during which the existing work competences are identified. It is more difficult to offer specific courses to someone who already has a high qualification, as the development of such a course will be expensive, and the course will be exclusive.

Some inconvenience may cause the absence of a single database on the website of the Ministry of Labor, which collects information about all educational organizations included in the retraining program, as well as the list of proposed courses.

Retraining or obtaining a new profession can be conducted both in person and remotely (online courses), and the second form is preferable, as it allows to reduce costs and attract more trainees [2]. Also very promising is the use of new technologies in education, namely, the Internet of Things [3].

This initiative to maintain the active social position of newly trained pre-retirees is welcome, but, unfortunately, the program does not cover a large number of citizens who have exceeded the retirement age. And self-actualization as a

continuous process of developing opportunities for professional growth and creativity for this age group is especially important [4], [5].

Today, the retraining of citizens of age groups is relevant not only for Russia. For example, in European countries, negative demographic trends (population ageing) are becoming noticeable, which in the long-term forecast will necessarily affect the labor and employment market [6], [7]. Therefore, prolonging the active work of older persons is a serious government task [8]. And one of the prerequisites for extending the work of workers aged fifty to sixty years is to improve the quality of retraining of specialists [9].

In addition to economic problems, after reforms to increase the retirement age in the same Germany, it is necessary to address the issues of social adaptation of older workers of different professional qualifications [10]-[12].

Thus, the World Health Organization states that psychosocial adaptation is directly related to physical health [13], [14]. After all, it often turns out that actively aging people can realize only themselves in the field of freelance (copywriting) and network marketing [15].

Therefore, a similar plan of action for the older contingent should be adopted at the state level, taking into account the bottlenecks of the current program, both for working and non-working pensioners. Probably, the main focus of the courses will remain the same, with more freedom of choice for everyone, because if there is an "airbag" in the form of pensions, it's possible to try radically change the field of activity.

The analytical review [16] showed a generally positive attitude of Lithuanian employers in construction, education, trade, health care and public administration towards age-related employees. And retraining increases the competitiveness and demand of professionals, overcoming some outdated norms and stereotypes in employment [17].

II. METHODS

Since the state program of retraining citizens of pre-retirement age started relatively recently, it is still difficult to detect any prevailing trends in preference for certain directions. Similar retraining or additional vocational education courses at various training sites, offered for all age groups, including "post-retirees", are too fragmented and not systematic, are often held once, for example, for staff in the same agency.

In our view, the detailed information on such courses should be entered into a single database of the region and above. If a sufficient amount of information is accumulated, it is necessary to process the data in an appropriate way in order to clarify the forecasting of the labor market of the Russian Federation.

The statistics for attending training courses can be processed using a standard mathematical statistician toolkit using mathematical modeling and special application packages (SPSS, Statistica). To this end, the work [18] in which the author describes in detail the system of economic and

mathematical methods and applied models to solve a wide range of economic analysis and forecasting tasks can be interesting.

Also very promising is the use of fuzzy logic techniques in intelligent expert assessment and classification systems with predictive function. In turn, Experts and future users should work out the optimal model of interaction [19].

Thus, N.N. Leonov's paper [20] describes the technologies for evaluating the results of sociological studies based on fuzzy classification methods. This approach is justified because of the weak degree of structure and formalization of social processes, including in the field of training and the choice of directions for professional retraining.

To correctly set the function of belonging, you can use the method of expert assessments with the involvement of questioning experts. In the [20] the author proposes an algorithm of calculations with weighing, where the function of belonging is accepted as weight. 14 qualities and preferences were assessed, including the need for self-education, adaptability, performance and other important aspirations for the employer. For monitoring, information was processed using classical factor analysis, and a good correlation was obtained. So, it has been shown that fuzzy classification methods can be successfully used in sociological studies both independently and in combination with traditional methods of processing large amounts of data.

III. RESULTS

In a fast-paced digital economy and modern technology production, it is necessary to have advanced communication skills with computer technology. Thus, on the basis of the Kazan Energy University, on the initiative of the leadership, computer literacy courses were conducted for the age group of university employees.

The "non-classical" form of the training lesson showed itself well - the theoretical material alternated with immediate practical study.

After completing the courses, the students were asked to answer 15 questions of professional and social orientation. Below are the answers to the final question, "What knowledge and skills should you gain?"

TABLE I.

Response statistics	№ in/o	Possible answer	Percent
	1	New professional competencies	45%
	2	Knowledge of information technology	27%
	3	Business communication skills	20%
	4	Other	8%

The results of the questionnaire were visualized using diagrams in the Excel table processor and processed in accordance with the recommendations for the study of the statistical data described in the work [21].

It is planned to further develop this research in the form of design and development of a software complex, taking into account the results of pre-testing of those wishing to gain new professional knowledge, with the targeted decision-making function on the selection of a training course (courses), the required form of education and an educational platform [22].

When a large amount of statistical material accumulates, the software will actually acquire the status of an intellectual expert system that works on the basis of expert assessment and fuzzy logic methods [23].

The input will be such parameters as the level of competences available, psychological qualities, physical characteristics of the person. Theoretical provisions and results [24] are supposed to be used in the development of the system.

In this paper, the authors describe the stages of creating a software tool with the function of supporting decision-making on the individual selection of the interface based on expert evaluation and fuzzy set theory, where the system's input is served by user characteristics. Also, the experience of developers of the fuzzy expert system that serves to assess the knowledge management of social media users [25] can be useful in the development of our software.

IV. CONCLUSION

Thus, we can conclude the following.

- Of course, in the future, the state program of acquiring additional or completely new professional knowledge should cover all those who want to actively work without age limit. This will make it easier for citizens to find jobs or keep jobs, as well as reduce social tensions in society.
- In the preliminary questionnaire to the tests on professional competence should, in our opinion, add questions with the psychosocial component [26], to "prevent the development of negative trends in the psychology of people, overcome difficulties of personal growth, correction of deviating behavior, elimination of conflict situations in relationships [27].
- The next stage should work an expert system with the function of making decisions on the selection of vocational training courses based on information on all courses not only regional, but also all-Russian coverage. In view of the fuzziness and weak formalization of input information, the use of fuzzy logic techniques to develop an expert system seems to be a rational solution.
- After the course, it is advisable to conduct a questionnaire on satisfaction with the educational material. In addition, in order to improve the effectiveness of training, the final step may be the introduction of an intelligent expert system for assessing knowledge [28].
- The statistics about the demand for a course, the number of people employed in a new profession,

feedback on the quality of the knowledge received, etc. should be stored in a single database.

- In our opinion, it is advisable to include serious Internet resources, such as *intuit.ru*, in the list of educational organizations providing distance learning [29]. Assessment of acquired professional knowledge can also be carried out in the form of independent electronic testing using Internet resources [30].

It is safe to say that the automation of the process of retraining citizens of age groups will save resources (without developing clone courses) and make timely and informed management decisions in the sphere of economy, labor and employment.

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