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INNOVATION IN KNOWLEDGE TRANSFER OF UNIVERSITIES - A DETERMINANT OF ENTERPRISE DEVELOPMENT

Abstract

The article is theoretical and analytical and aims to analyse innovation in knowledge transfer of universities. Its first part discusses the aim of the didactic and educational activity of every educational institution as well as describes innovation and innovativeness. Next the article attempts to assess the innovativeness of students as well as evaluation of the education offer at universities and verify students' approach to the issues of innovation.

Keywords**:** creativity, innovation, managers, students, safety, knowledge transfer, enterprise development.

JELL Clasification: F63, O10

Paper type: Theoretical research article

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Introduction

The aim of the didactic and educational activity of every educational institution, and especially higher ones, is to prepare the graduate's intellectual and professional skills for life in the society. When creating education programs in a specific field of knowledge or subject of education, it is assumed that their implementation will ensure that the teachers acquire the necessary minimum of required competences. The willingness to meet them prompts managers to create innovative solutions, search for new possibilities of action, ways of activating employees, stimulating them to think and act independently. it is primarily about taking innovative, unconventional and creative activities, especially in making decisions in crisis situations. The concept of innovation was introduced into the language of science in Poland by Z. Pietrasiński. The author pointed out that innovations are "changes intentionally introduced by man or cybernetic systems designed by him, which consist in replacing the existing states of affairs with others, assessed positively in the light of specific criteria and constituting in total progress"(Pietrasiński 2001).

Terms "innovation" and "innovativeness" are also the subject of special interest in contemporary public discourse, including educational. It is worth mentioning here, for example, that the European Parliament and the Council of the European Union have already announced 2009 as the Year of Creativity and Innovation. The main goal of the activities undertaken this year was to make everyone aware that creativity and innovation are the key not only to the economic, cultural and scientific development of regions and countries, but also to the individual development of each person. Moreover, many European Union documents and legal acts treats issues related to innovation as a priority. At this point, we can mention, for example, the Europe 2020 Strategy, which indicated as a priority: "smart growth: development of an economy based on knowledge and innovation" (Brussels 2017) . Also in Poland, various documents, programs and competitions indicate the importance of innovation in the development of enterprises or scientific institutions. Importantly, the main way to implement these priorities should be appropriate quality education.

The situation outlined above prompts a renewed discussion on the place and role of innovative activity in universities. Therefore, activities and research have been largely focused on strengthening the ties between theoreticians and pedagogical practitioners, on supporting, promoting and disseminating innovative activities of teachers, educators and employees. Their scope is the issues of pedagogical and managerial innovation, conducted didactic classes devoted to modern trends in education, analysis of the content of the literature on the subject on this issues and - what is especially cognitively valuable - practical

experience gained / beinggained in the course of implementing pedagogical innovations.
Assuming that the selected theoretical contexts are the foundation of thinking about the innovative actions of the teacher-manager and the resulting opportunities. Innovation is (Jamieson, M. V., & Shaw, J. M. 2020):

- a set of features characterizing a given person or group of people (adjective approach),
- a set of activities (i.e. a process), as a result of which new ideas, solutions, etc. arise (functional - process approach),
- output (effect) of the above process (objective approach).

Without resolving the above dilemma, a creative and innovative person can be attributed, inter alia, the following features: she is considered a rebellious and independent person, she is inquisitive, she has imagination, she is educated - she has knowledge, she has the ability to observe, she is witty and she can think in an unconventional way, she can focus (concentrate).
Innovation (Latin revival) is a special type of change. J. Schumpeter regards innovation as "introducing new products, new production methods, finding new markets, acquiring new sources of raw materials and introducing a new organization". In a treated as: a fundamental or radical change, involving the transformation of a new idea ov technological inventron, innowatron is market product or process, the first application of science and technology, the first commercial launch of a new product, process or device, the first application of an invention (Schumpeter 1960). In a broad sense, innovation is: any good that is perceived by someone as new, any change in products and processes that improves the company's competitive position in relation to other companies on the market. All definitions of innovation also emphasize that:
• the subject of innovation is man: only changes resulting from human activity are considered innovations; people are the creators and recipients of innovation, and also participate in the processes of transfer and diffusion of innovation,

- the subject of innovation are products, production processes and organizational solutions, and the essential features of innovation are novelty, improvement, perfection,
- innovations are the introduced beneficial changes, they are the environment and a tool for achieving social and economic goals on the scale of the enterprise, region and state,
- innovations are local in nature; it does not matter that new products or production processes are already known elsewhere; for a given place (company, market) they are innovations.

1. Purpose of the Study and Methodological Assumptions

Innovation is the basic element of 21st century organizations aiming to accelerate growth. It becomes necessary to search for new products, new technologies or new organizational forms in the integrated development of innovative activities of the organization. Their future seems to be young people - students, graduates of universities and centers, representatives of Generation Y, who have "tamed" technological innovations and actively use digital media and digital technologies, also justified it, (Breivik-Mayer, M., Arntzen-Nordqvist, M., & Alsos, G. A. 2020):

• an attempt to assess the innovativeness of students - managers, both in terms of examining their self-assessment in the above-mentioned scope as well as checking the possibilities of logical and creative thinking and examining the potential of the features describing their personality - before and after the training,

- analysis of the evaluation of the education offer at universities in terms of shaping pro-innovative attitudes, available in the course of studies and courses - seen through the eyes of the student,
- verification of students' approach to the issues of innovation.

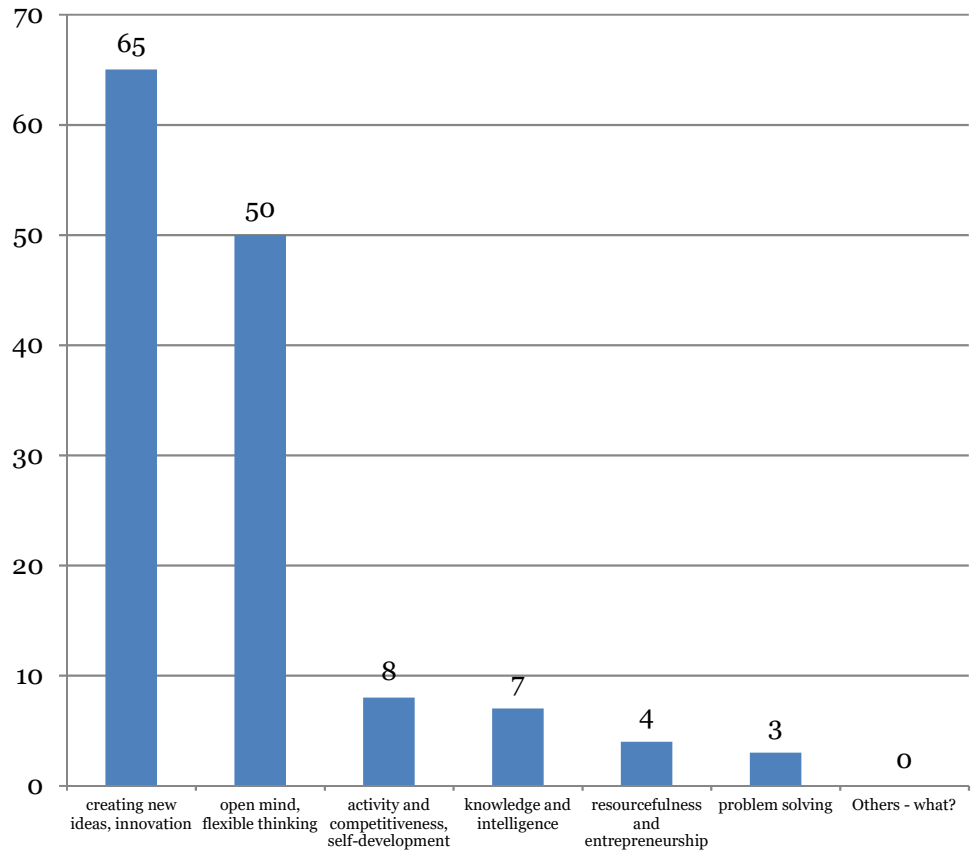
Generally speaking, the aim of the research was to examine the perception of students in terms of the issues analyzed in the project and on this basis to develop a scientifically justified concept of organizational and functional solutions, increasing the effectiveness of education in the field of activities developing their innovation - attitudes of people prepared and focused on changes and able to implement them in practice. The concept will also result in proposals for changes in educational programs.

The results and autcomes of the quantitative research conducted indicate the directions and activities that should be carried out in terms of increasing the level of innovation among student-managers. The results and autcomes of the conducted quantitative research conducted concerned an attempt to evaluate innovation, both in terms of examining their self-assessment in the above-mentioned scope, as well as checking the possibility of logical and creative thinking and examining the potential of the features describing their personality, turn out to be positive or not, from the point of view of the effectiveness of implementation expected outcomes at the stage of education. In addition, the results of partial research were presented at the International Defense Exhibition in Kielce (Kopczewski 2021).

2. Analysis of Responses from the main Part of the Survey

In the first question of the survey, the respondents were asked to indicate the features they associate with creativity. The question did not specify the number of answers allowed and was answered by all respondents. The results in quantitative form are presented in Figure 1.

Figure 1. Quantitative scale of responses to question 1: 'In your opinion, creativity is:' (N=101).

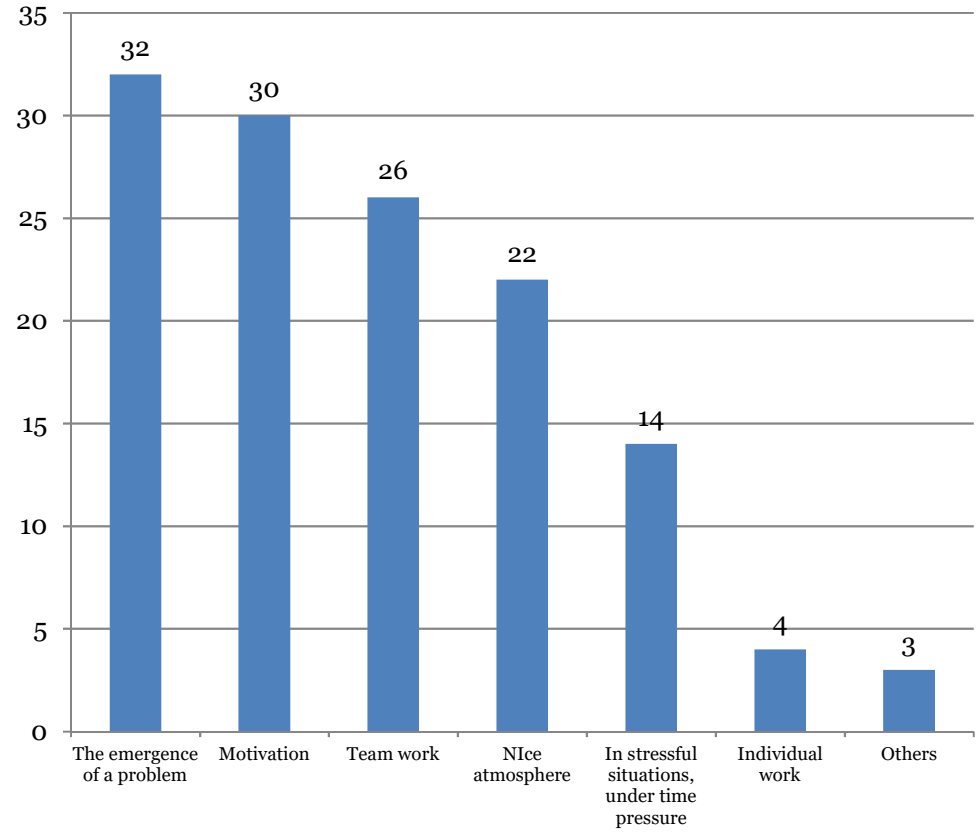


Source: Own work.

The results of the research showed that by far the most frequently indicated features associated with the notion of creativity were the creation of new ideas, innovativeness, and an open mind and flexible thinking. It constitutes a set of features related to proactive activity resulting in the willingness to implement own initiatives.

In the second question of the questionnaire, the respondents were asked to indicate circumstances conducive to innovativeness. This question also did not specify the number of answers allowed. The question, as before, was answered by all the respondents and the results in quantitative form are presented in Figure 2.

Figure 2. Quantitative scale of responses to question 2: 'What circumstances are the most conducive to creativity and innovation?' (N=101).



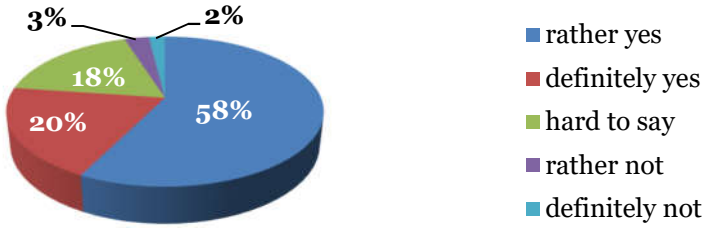
Source: Own work.

The results of the research showed that, in contrast to the previous question on associations with creativity, in the case of circumstances, the four leading response factors proved to be relatively similar in quantitative terms. In the opinion of the respondents, the most important factors favoring creativity and innovation were the emergence of a problem, motivation, team work, and a nice atmosphere. The three answers in the category "others"

were related to openness to innovation, appropriate organizational culture, and freedom of expression.

The third question of the survey concerned the respondents' feeling of their own conviction about the effectiveness of action to solve problems. This question was again answered by 100% of people and the percentage results are presented in Figure 3.

Figure 3. Percentage scale of responses to question 3: 'Do you always work with a high degree of certainty that you are on the right track to solve a particular problem?' (N=101).

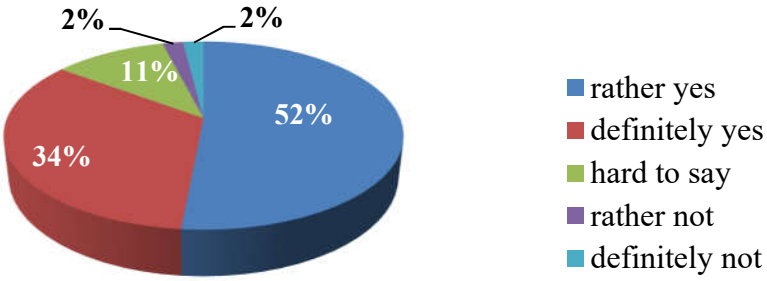


Source: Own work.

The research results indicated that the most respondents positively referred to their own feelings of effectiveness in solving problems. Differentiation is particularly visible after the percentage statement of positive (rather yes and definitely yes) and negative (rather not and definitely not) categories of 78% and 5% respectively.

The fourth question of the survey was to ask the respondents whether a step-by-step approach to problem solving is effective. The question was answered by 99% of the respondents. Figure 4 displays the percentage results.

Figure 4. Percentage scale of responses to question 4: 'Do you feel that the logical step-by-step method is best for solving problems?' (N=100).

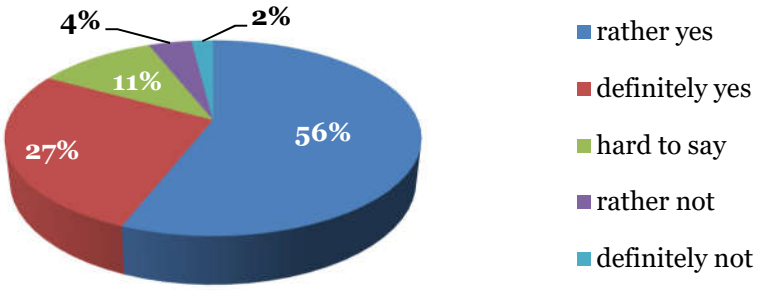


Source: Own work.

The results of the research showed that, as in the case of question 3, most respondents expressed a positive opinion, this time in terms of their belief that using the step-by-step method in action is the best method of solving problems. The difference between the positive and negative categories was even greater, as the percentage was 86% and 5% respectively.

The fifth question of the questionnaire concerned the respondents' assessment of whether team work allows them to change the behavior of other people by expressing own opinions. This question was answered by 99% of the respondents, and the percentage results are presented in Figure 5.

Figure 5. Percentage scale of responses to question 5: 'When working in a group, do you occasionally express opinions that change others' way of thinking?'

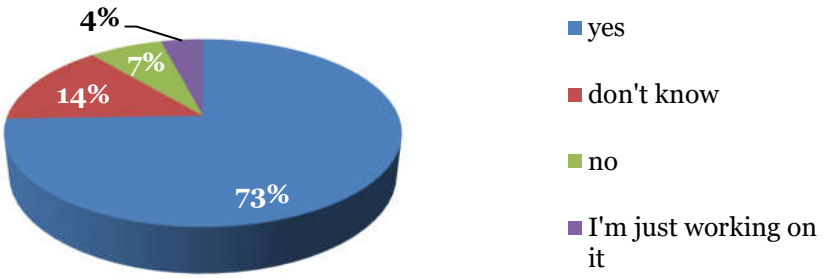


Source: Own work.

The results of the research showed that once again the respondents in vast majority expressed their positive/negative attitude to the content of the question - 83% and 6% respectively. It means that in their opinion, team work aimed at solving a given problem requires the exchange of opinions.

The sixth question of the survey was whether they created a solution to a difficult problem, which they later implemented. This time all the respondents also answered, and the percentage results are presented in Figure 6.

Figure 6. Percentage of responses to question 6: 'Have you ever come up with a solution to a difficult problem that you later implemented?'

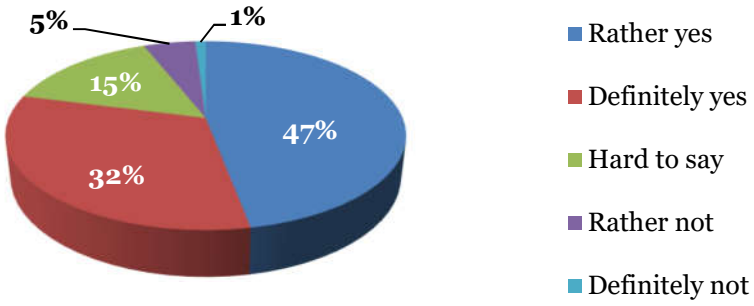


Source: Own work.

The results of the research proved that the most of the respondents (73%) came up with a solution to the problem, which they then used in practice. It is a positive sign of their analytical thinking capacity.

The ninth question concerned the respondents' opinion in terms of confirming or denying that they consider themselves as seeking creative solutions in their daily work. 99% of the people answered the question, and the results in percentage scale are presented in Figure 7.

Figure 7. Percentage scale of answers to question 9: 'Are you trying to think out of the box and look for more creative ideas when solving tasks?'



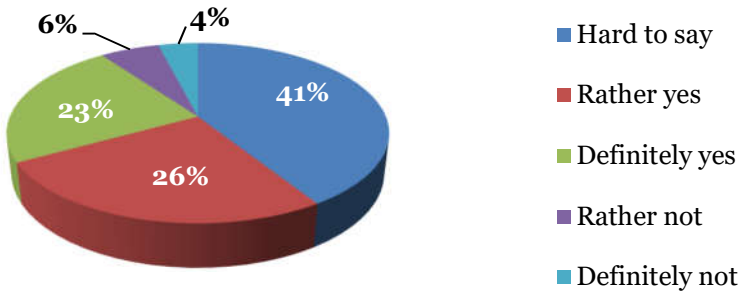
Source: Own work.

The results of the research showed that in total 79% (by summing up the affirmative answers) of them confirmed their creative way of acting. As in the case of the answers to question 6, it, therefore, proves their high degree of analytical thinking and creativity in solving problems.

The question 10 was connected to the respondents indicating whether in their opinion it is more interesting to create new ideas or to provide

information about the idea to others. The question was answered by 95%.The results in percentage scale are presented in Figure 8.

Figure 8. Percentage scale of responses to question 10: 'Is it more interesting to come up with new ideas or communicate an idea?'(N=96)

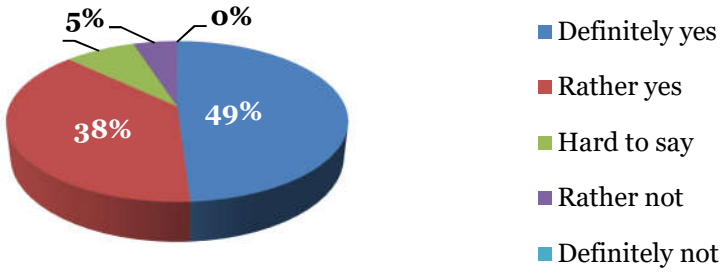


Source: Own work.

The research results indicated that similarly to the answers to question 8, the majority of respondents (41%) did not have a clear opinion on the matter concerned. However, a total of 49% of them responded (by summing up the affirmative answers) that in their opinion it is more interesting to come up with an idea than to provide information about it. Therefore, as in the case of answers to question 6, it proves the high potential of the respondents and the level of willingness to document the results of their analyses that needs to be improved.

The question 11 was linked to the respondents indicating whether in their opinion it is more interesting to create new ideas or to provide information about the idea to others. The question was answered by 99% of people. The results in percentage scale are presented in Figure 9.

Figure 9. Percentage of responses to question 11: 'Do you like working as a team?' (N=100)

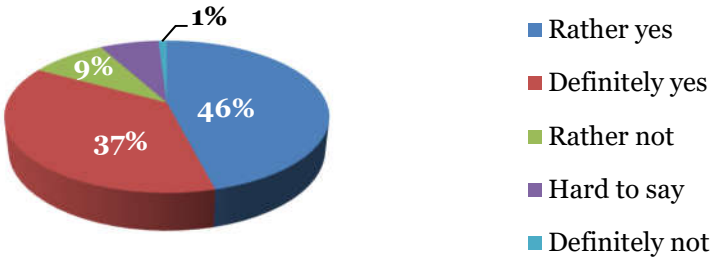


Source: Own work.

The results showed that almost half (49%) of the respondents declared a strong willingness to work as a team, and 38% of them answered "rather yes", which gives a total of as much as 87%. Therefore, it shows a very high level of teamwork skills, shaped, among others, during the training process. It should translate into high efficiency of action during future service.

In question 12, the respondents were asked to indicate whether they like to break schemes in action. This question was answered by all respondents and the results in percentage scale are presented in Figure 10.

Figure 10. Percentage scale of responses to question 12: 'Are you a person who likes to break schemes?'

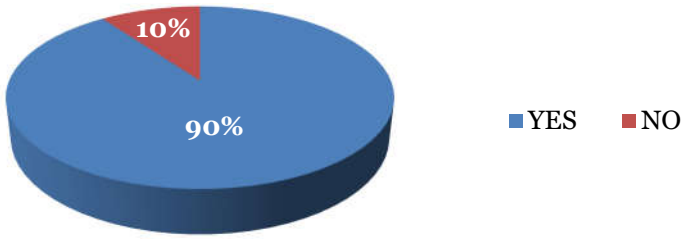


Source: Own work.

The results showed that, as in the case of the answers to the previous question, almost half (46%) of the respondents declared a strong willingness to break schemes, while 37% of them answered "rather yes", which amounted to the total of 83%. Again, similarly as in the case of answers to questions 3-6, it indicates a high level of respondents' creativity.

In question 13, the respondents' task was to determine whether they like to learn and develop. This question was answered by all respondents and the results in percentage scale are presented in Figure 11.

Figure 11. Percentage scale of responses to question 13: 'Do you like to learn and develop?'

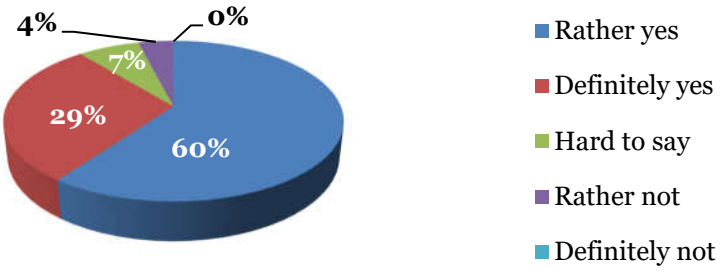


Source: Own work.

The results showed that almost all respondents strive to learn and develop, which once again confirmed their high level of self-development motivation.

The question 14 asked respondents to indicate whether they acquire at least a few new skills during a year. This question was again answered by all respondents. The results in percentage scale are shown in Figure 12.

Figure 12. Percentage of responses to question 14: 'Do you acquire several new skills during the year?' (N=101).

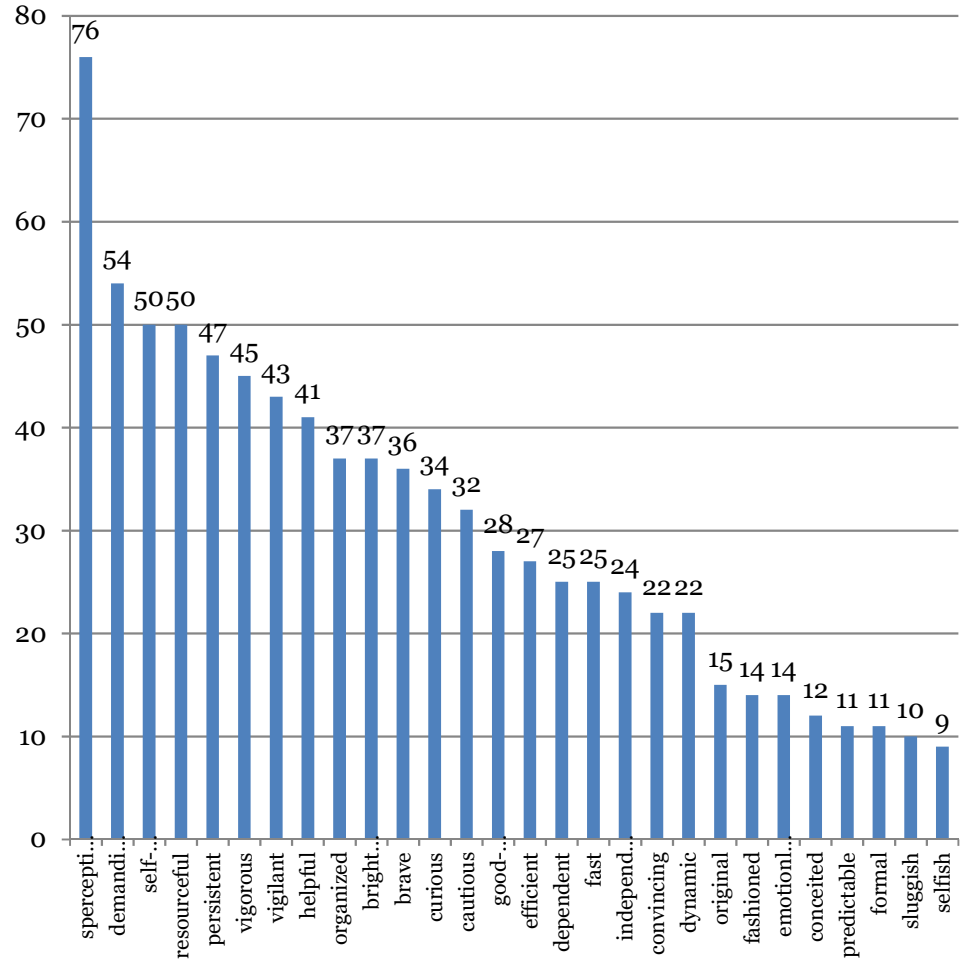


Source: Own work.

The results of the survey showed that almost all respondents (89% of the answers "rather yes" and "definitely yes") declared that they acquire at least a few new skills during a year, which again confirmed their high level of innovativeness.

In the sixteenth question, the respondents were asked to choose from among possible answers 10 characteristics which in their opinion best reflect their character. This question was answered by 99% of the respondents. The results are presented on a quantitative scale in Figure 13.

Figure 13. Quantitative scale of responses to question 16: 'Below there is a list of personality descriptors. Choose 10 that characterize you most' (N=100)

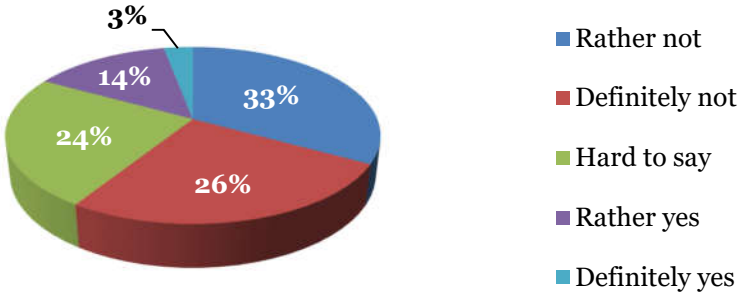


Source: Own work.

The respondents indicated a total of 851 traits. The results showed that as much as 88% (741) of them were positive features, which proves a very high level of own positive perception. Only 10% were clearly negative traits and 2% indifferent ones. At the same time, it should be noted that the total sum of the indicated characteristics exceeded the allowed number (10 per 1 respondent), which resulted in a bad interpretation of the content of the question by 10% of the respondents who indicated more than 10 traits in their answers. This fact, however, due to a relatively small number of errors, did not negatively affect the reliability of the research results.

The seventeenth question asked the respondents to indicate whether during their period of study, the lecturers rewarded ingenuity and innovative thinking. This question was answered by 98% of respondents. The results in percentage scale are presented in Figure 14.

Figure 14. Percentage of answers to question 17: 'Is ingenuity and innovative thinking rewarded and appreciated in your studies?' (N=99)



Source: Own work.

The results showed that in this case, for the first time in a survey, the majority of respondents (59% of the total sum of answers "rather not" and "definitely not") indicated negative answers.

3. Synthesis of Test Results and Conclusions

The overall assessment of the usefulness of the research carried out should be considered highly positive, as most questions were answered by almost 100% of the respondents. The only exception to this rule were open-ended questions, which required an in-depth analysis and thus more time to answer. Summarizing the nature of answers provided by the respondents, it should be noted that in most cases they were positive. That was expressed both in their recognition of the essence of innovativeness and creativity, their high assessment of their own level, and the increase in their level after completing their education during military studies in relation to the period preceding them.

The respondents almost unequivocally indicated that they like to work as a team, break schemes in action, and constantly strive for self-development, which will certainly positively affect the quality of their service. At the same time, it demonstrates the desired direction of shaping future managers, as regards educational content, since, as the respondents indicated, the evident progress in creativity and innovativeness.

The respondents, as far as areas conducive to their development are concerned, appreciated, first, the possibility of learning foreign languages, management, and the possibility of implementing innovative

solutions while creating their diploma theses. The research has shown that there is no doubt that the study of the level of students' innovativeness and creativity is necessary in the context of their future existence on the labor market. In summary, the most important conclusions of the research are as follows:

1. The respondents almost unequivocally indicated that they like to work as a team.
2. There is noticeable progress in creativity at the time of professional promotion
3. The most important feature of teachers according to respondents are Soft skills.
4. This significance is increased due to increasing the service quality of managers.

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