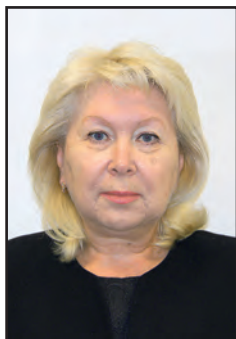




# Research on Individual Motivators of Graduates of Transport Educational Institutions



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## ABSTRACT

The article substantiates the relevance of studying individual motivators of future civil aviation pilots and future railway employees in the context of their professional education and describes the results of the study that had the objective to determine degree of evidence and conjunction of mean group motivators of two categories of respondents, as well as influence of obtained motivational profiles on the peculiarities of perception of the future profession by students of transport educational institutions.

The chosen empirical research method was based on diagnostics according to the «Motivation profile» test developed by S. Ritchie and P. Martin. This motivation test is a reliable and valid tool for measuring person's individual motivations for activity, based on the study of 1355 motivation profiles of an international group of respondents suitable for analysis. The authors of the test identified 12 factors, which are human needs that drive people at work, the severity of which is reflected in the motivation profile of a person or a group.

The present study involved 144 cadets of the 5<sup>th</sup> year at Ulyanovsk Civil Aviation Institute named after Air Chief Marshal B. P. Bugaev pursuing «Organisation of flight work» specialised study course, and 50 3<sup>rd</sup> year students at Ulyanovsk Railway College, pursuing the «Technical operation of rail rolling stock of railways: Assistant driver of a diesel locomotive» study course.

The diagnostic experiment namely allowed to develop mean group motivation profiles of these categories of respondents and to carry out their analysis in terms of the requirements for the future occupation of the respondents. Particular attention was paid to a comparative analysis of motivation profiles of future civil aviation pilots and future railway employees.

Recommendations based on the results of the study are aimed at improving the educational process of a transport educational institution.

**Keywords:** transport, civil aviation, railways, education, training, transport educational institution, human needs, motivators, motivation profile, individual and mean group motivators of students.

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## INTRODUCTION

Currently, best practices of human resources management pay more and more attention to the study of individual motivators of employees. Individual employee motivators are incentives that encourage a particular employee to perform more efficiently [1]. Previously, it was believed that material remuneration in monetary or non-monetary form can better than all initiate professional activity of an employee. Currently, effective motivators comprise also free time, the opportunity to choose a convenient vacation time, professionally prestigious business trips, advanced training courses, etc. [2, pp. 160–167; 3, pp. 361–417; 4, pp. 71–80; 5–7; 8, pp. 366–380]. A distinctive feature of companies focused on development of a motivation environment is the study of personal motivators of employees and offering them a choice of motivation options commensurate with the professional result obtained by the employee and consisting of the motivators in which the employee is really interested in [9, pp. 160–167]. Such an approach to stimulating the labour activity of personnel allows not only considering individual preferences of the employee, but is also a manifestation of corporate care based on the freedom of the employee to choose such an incentive, which will further develop his professional initiative and performance to the maximum extent.

The study of individual motivators of employees allows management to psychologically expediently distribute the bonus fund of the enterprise, correlate the expectations of employees with capabilities of the company, and find additional corporate resources to develop its competitiveness. Determining the personal motivators of employees allows management to use additional levers of influence on the staff, predict the behaviour of employees and ensure its uniformity. This is due to the fact that a systematic analysis of prevailing and rejected individual motivators of employees demonstrates a system of personal values of employees being implemented, which are the basis of the real organisational culture of the enterprise. In management practices, there are various technologies for monitoring and developing the motivation environment: employees' surveying to identify segmented and corporate-wide values [9, pp. 177–185],

study of job satisfaction [10, pp. 33–109], study of motivation resources of enterprise management [11, pp. 124–136], staff turnover analysis [12, pp. 369–377].

The study of individual motivators is important at various stages of the professional career of employees. So, during the period of obtaining professional education, students have the opportunity, having studied their system of personal motivators, to correlate their professional expectations with the possibilities of their future profession, to correct the imbalance that has arisen through development of new motives for professional activity.

Knowledge of the main trends in development of students' personal motivators for their mastering and self-development in their future professional activity will allow the administration of educational institutions to make adjustments to the educational process, bringing into line the requirements and features of students' future professions and their personal ideas regarding the style of work regarding their chosen future occupations [13; 14].

The *objective* of the article is to present and analyse the results of a study on individual motivators of future civil aviation pilots (hereinafter referred to as CA) under the conditions of their higher professional education, as well as to conduct a comparative analysis of severity of motivators of students studying at civil aviation and railway educational institutions.

## MATERIALS AND METHODS

The objective was achieved through application of *theoretical* (analysis of scientific literature, comparative analysis, extension), as well as *empirical research methods* (diagnostic experiment).

The research comprised a study on individual motivators of cadets-pilots of the 5<sup>th</sup> year at Ulyanovsk Civil Aviation Institute named after Air Chief Marshal B. P. Bugaev and of railway students of the 3<sup>rd</sup> year at Ulyanovsk Railway Transport College.

The study was carried out in three stages.

The first stage focused on identification of personal and mean group motivators of 5<sup>th</sup> year cadets pursuing the «Organization of flight work» study course at Ulyanovsk Civil Aviation Institute named after Air Chief



Marshal B. P. Bugaev. The study was conducted in November–December 2021 and involved 141 cadets (five study groups). The results of the diagnostics allowed to develop an mean group motivation profile of the respondents and to analyse its correlation with the characteristics of the profession of a civil aviation pilot.

The second stage of the study focused on diagnostics and subsequent analysis of personal and mean group motivators of 50 3<sup>rd</sup> year students of Ulyanovsk Railway College, pursuing the «Technical operation of rolling stock of railways: – Assistant driver of a diesel locomotive» study course. The study was conducted in February 2022.

The third stage focused on a comparative analysis of the mean group profiles of future transport employees (civil aviation pilots and diesel locomotive driver assistants) and on drawing research and practical conclusions.

The «Motivation profile» test by S. Ritchie and P. Martin, which is a reliable and valid tool for measuring person's individual motivations for activity, was used a diagnostics tool [15]. The authors of the test identified 12 motivation factors which are human needs that motivate people at work. Below, there is a brief adapted description of these factors followed by the indication of the value of the mode (the most common value of the motivator in the group of respondents participating in the initial approbation of the test) [15, pp. 24–26].

1. The need for high earnings, material rewards and material benefits. Mode – 27 points.

2. The need for comfortable working conditions. Mode – 17 points.

3. The need to structure work, to reduce the degree of uncertainty associated with work. Mode – 26 points.

4. The need for social contacts with a wide range of people. Mode – 27 points.

5. The need for stable, trusting relationships with a small group of people. Mode – 18 points.

6. The need for recognition and acknowledgment from other people. Mode – 35 points.

7. The need to set and achieve complex professional goals, self-motivation. Mode – 36 points.

8. The need for influence, power, and control over others. Mode – 31 points.

9. The need for variety and change, novelty, avoidance of boredom. Mode – 34 points.

10. The need for creativity, openness to new ideas, curiosity. Mode – 32 points.

11. The need for self-improvement of one's personality. Mode – 35 points.

12. The need to be in demand in the framework of interesting and socially useful activity. Mode – 41 points.

After determining severity of each of these factors, the researcher builds an individual motivation profile of the tested person, which is analysed according to the priority of each motivation factor and their cross-influence. This makes it possible to assess the real picture of person's needs and, as a result, draw conclusions about professional aspirations of the respondent, the conditions of his job satisfaction, and the presence of scarce needs.

## RESULTS

Study of the Features of Individual and Mean Group Motivators of Students of Transport Educational Institutions

The first stage of the diagnostics of individual motivators involved five training groups of cadets-pilots, personal values of each of 12 motivators for each cadet were calculated. Next steps were to develop mean group motivation profiles for each of five training groups, then, a general group profile, which was further analysed from different aspects.

Mean group values of 12 motivators for each training group of cadets-pilots are shown in Table 1.

To obtain a more homogeneous picture of severity of motivators with the considered group of respondents, we built an mean group profile of the pooled group of cadets. It is shown in Pic. 1.

The analysis of mean group motivators was based on a comparison of motivators with each other and with the value of the mode.

So, the results of the diagnostics of mean group motivators showed that the most pronounced motivators of the surveyed cadets-pilots were «Income», «Achievements» and «Interesting and useful work».

The combination of «Income» and «Achievements» factors may indicate that the respondents associate high remuneration with the results of their work. At the same time, they are ready to set themselves complex professional goals, make the necessary efforts

Table 1

Mean group motivators of cadets-pilots [compiled by the authors]

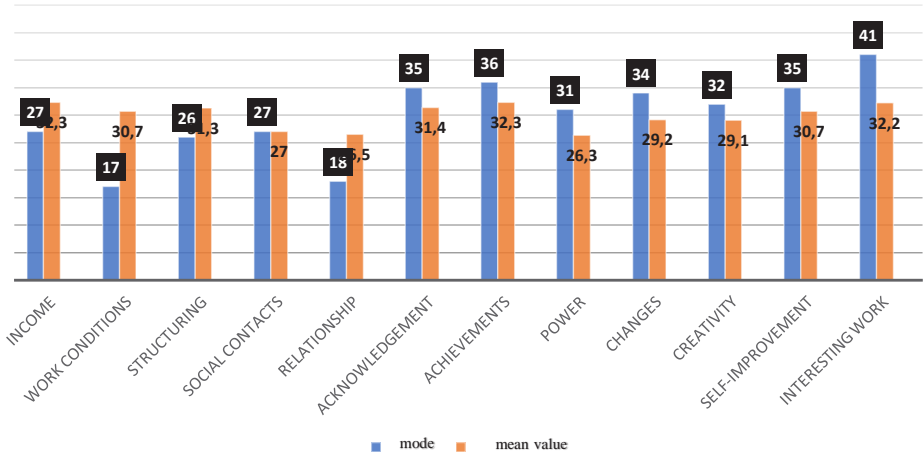
No,	Motivation factors	Mode	Study groups					Mean value
			P-1	P-2	P-3	P-4	P-5	
1	Income	27	35,4	30,45	28,1	33,8	33,83	32,3
2	Work conditions	17	29,3	33,68	30	29,1	31,61	30,7
3	Structuring	26	29,0	32,09	31,3	33,45	31,17	31,3
4	Social contacts	27	21,6	29,64	27,8	28,1	27,78	27
5	Relationship	18	22,9	28,41	25	26,7	29,33	26,5
6	Acknowledgment	35	31,2	29,45	32,2	32,35	32,11	31,4
7	Achievements	36	34,9	30,95	34	31,95	29,67	32,3
8	Power	31	24,7	29,73	26,1	24,5	26,44	26,3
9	Changes	34	28,7	30,23	27	31,2	28,78	29,2
10	Creativity	32	29,8	29,09	29,9	29,4	27,39	29,1
11	Self-improvement	35	34,0	28,27	29,3	30,6	31,72	30,7
12	Interesting and useful work	41	37,6	27,73	35,2	31,95	28,89	32,2

\* Here and further-on the short names are used in designations of the factors.

and receive appropriate remuneration for this. Such an attitude towards professional activity, on the one hand, encourages future civil aviation pilots to engage in professional development, and on the other hand, it can cause them to feel that their efforts and earnings do not match. This, in turn, can increase job dissatisfaction and a decrease in interest in it.

The combination of the significant factors «Income» and «Interesting and useful work» means that cadets understand that they will be remunerated, first of all, for the benefit that

they bring to people. It should be noted that if usefulness and interestingness of work in a company is not supported by organisational conditions, then the material remuneration of an employee is unlikely to increase the performance of the employee's work. Therefore, the administration of aviation companies should understand that high salaries of pilots cannot be a sole guarantee of the quality of work of flight crews. It is necessary to purposefully maintain pilots' interest in work for they perceive it as useful and meaningful for people.



Pic. 1. Mean group motivators of cadet pilots [performed by the authors].



Table 2

Mean group motivators of railway college students [compiled by the authors]

No,	Motivational factors	Mode	Mean group value
1	Income	27	33,4
2	Work conditions	17	33,4
3	Structuring	26	34,1
4	Social contacts	27	33,2
5	Relationship	18	26,7
6	Acknowledgment	35	33
7	Achievements	36	30
8	Power	31	22,1
9	Changes	34	28
10	Creativity	32	25,3
11	Self-improvement	35	30,4
12	Interesting and useful work	41	29,2

The combination of the importance for pilots of the factors «Achievements» and «Interesting and useful work» once again confirms the need for aviation companies to use modern social management tools to maintain the interest and personal perception of significance of work among the aviation personnel.

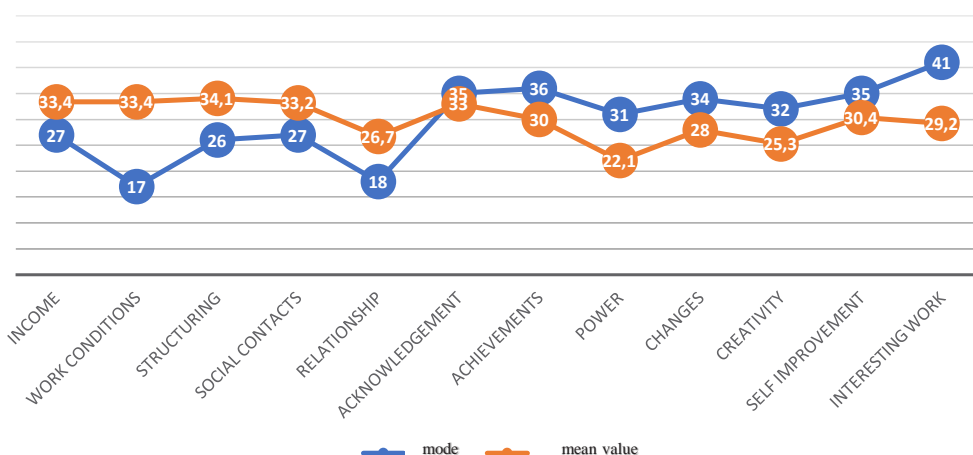
When comparing these motivation factors that are significant for future pilots with the mode (the mean statistical value of motivators obtained by the authors of the test during its approbation), it turned out that «Income» factor significantly exceeds the mode value, and «Interesting and useful work» factor is significantly lower than the mode value. This once again confirms the need to maintain (at the expense of internal resources or of the resources of the aviation company) a high interest of pilots in work, which will initiate their professional achievements and increase the corresponding material reward, which is a very important motivation factor for respondents.

The analysis of the mean group motivation profile of future pilots showed a rather high significance of working conditions for them, which indicates that cadets understand the peculiarities of the lifestyle of a civil aviation pilot, the need for an aviation company to comply with work/rest cycle of the flight crew, and the impact of these regulations on flight safety.

It is interesting to note that the significance for cadets of power and propensity to change is much lower than the mean values. This may indicate the orientation of pilots, first, to a «horizontal» career (changing the type of aircraft while maintaining the job position), second, to the importance of stability in all areas of life. These assumptions have been confirmed by studies of the main career orientations of future pilots according to Edgar Schein’s Career Anchors method [16].

It is important to note that the combination of the high significance of «Income» factor for cadets and the rather low significance of «Power» factor indicates that respondents understand the importance of vocational training, mastering more complex types of aircraft for consistent building of an expert career, which is an indicator of not only professional, but also material status of a pilot.

Combination of the high importance of «Income» and the relatively low importance of «Relationship» factor for future pilots is also a feature of the obtained motivation profile. The «Relationship» factor means the importance for a person of building long-term trusting relationships with colleagues. The low value of this factor shows the readiness of future pilots for the specifics of professional interaction in corporate flight departments, where remote contacts of pilots prevail over face-to-face relations, and do not allow



*Pic. 2. Mean group motivators of railway college students [performed by the authors].*

establishment of close interpersonal relationships between colleagues. Probability to be in a crew where pilots have never previously flew together also develops among civil aviation pilots readiness for rather short-term (for duration of the flight) business contacts.

The analysis of the results of the second stage of the study can be described as follows.

The mean group values of 12 motivators after diagnostics of the students of Railway college were similarly calculated. They are shown in Table 2.

To get a clearer picture of severity of motivators in the declared group of respondents, we built a mean group profile of the combined group of railway students. It is shown in Pic. 2.

When analysing mean group motivators of railway students, we will also use a comparison of motivators with each other and with the value of mode.

So, the results of the diagnostics of mean group motivators of railway college students showed that the most pronounced motivators of the respondents are «Income», «Work conditions», «Structuring». The predominance of these motivators may indicate, on the one hand, the priority of external motivation among future railway employees (decent wages, good working conditions, well-defined work regulation), and, on the other hand, may become an indicator of readiness for strict respect of job description, desire to improve their material well-being through conscientious work, compliance with employee discipline.

«Power» factor turned out to be the least significant motivation factor. This may indicate the orientation of college students, first, to a horizontal, and not to a vertical (aimed at promotion to the next job position) career.

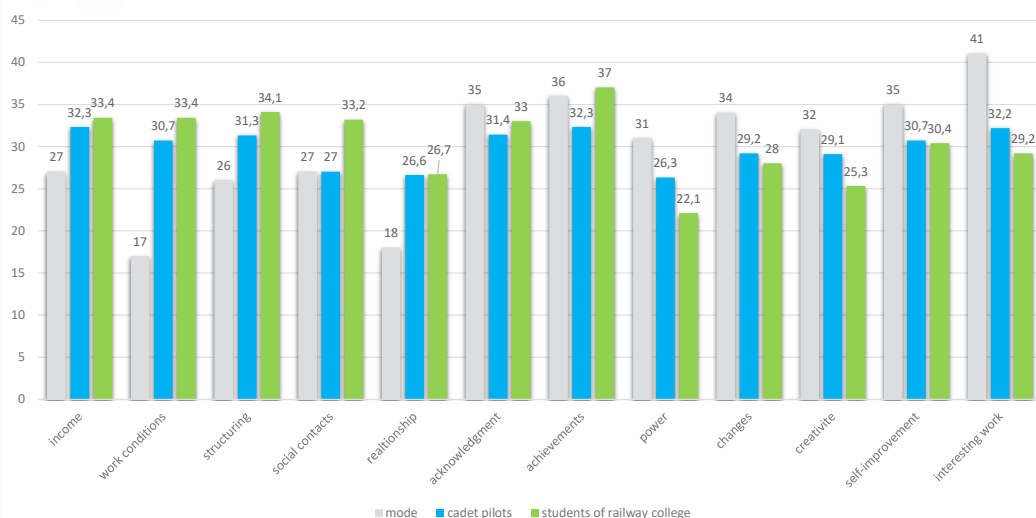
When comparing motivation factors that are significant for future railway employees with the mode, it turned out that «Work conditions» factor significantly exceeds the value of mode, and «Interesting and useful work» factor is significantly lower than the value mode.

This is a confirmation of the need to maintain a high interest in future work among students during the learning period, demonstrate the relationship between the results of work and earnings, develop readiness for various working conditions and force majeure circumstances.

The analysis of the mean group motivation profile of future railway employees showed a rather high significance of working conditions for them, which indicates that students understand the peculiarities of the lifestyle of railway employees, the need for a railway enterprise to comply with work/rest schedules, and the impact of these regulations on traffic safety.

It is important to note that the combination of the high significance of «Income» factor for students and the rather low significance of «Power» factor indicates that the respondents understand the importance of vocational training, mastering modern types of railway vehicles for consistent building of





*Pic. 3. Mean group motivators of cadet pilots and railway college students [performed by the authors].*

a professional career, which is an indicator of not only professional, but also material status of a railway employee.

The third stage of the study was dedicated to a comparative analysis of the mean group motivators for the professional activity of future aviation and railway employees.

A visual representation of the results obtained is shown in Pic. 3.

Comparison of individual motivators of future pilots and railway employees showed a sufficiently high similarity of almost all motivators. Respondents equally appreciate the importance of remuneration, work conditions and the regulation there-of, as well as relationships with colleagues. These motivators to a certain extent characterise the professional style of transport employees since the work-rest schedule, the equipment of the workplace, a precise regulation of activity are necessary attributes of these professions that ensure safety of air and rail transportation. Sufficiently high severity of the relationship motivator shows that students understand the importance of establishing positive relationships with the colleagues in interactions aircraft commander – co-pilot, locomotive driver – assistant driver, respectively.

The greatest discrepancies were revealed in severity of motivators «Social contacts» and «Power». Railway students attach greater importance to the need to expand social contacts, professional ties, and communication skills. Cadet pilots are more focused on the possibility of influencing, exercising control over colleagues.

This style of behaviour of the CA pilot is quite consistent with the CRM system, which provides for a clear cross-check of the flight crew members.

Comparison of severity of individual motivators of future pilots and railway employees the value of the mode showed that motivators of income, conditions and structuring of work in both groups of respondents significantly exceed the value of the mode. This indicates the increased importance of these labour incentives. On the one hand, this may indicate that students understand the features of their professions, and, on the other hand, they may have overestimated expectations regarding formal aspects of professional activity, which may not correspond to the real situation.

Quite indicative was the fact that the motivators «Interesting work», «Self-improvement» and «Changes» for all respondents are much lower than the value of the mode. This may indicate an insufficiently high interest of students in the content of their future profession and, as a result, in the desire to develop in it. At the same time, the lowered «Change» motivator may indicate a conservative orientation of their thinking, and, as a result, resistance to change. Changes may relate to organisational, technological changes, the development of new types of vehicles, etc. Transport is a dynamically developing sector of the economy; therefore, employees of transport enterprises should be ready for changes, which are always accompanied by the need for professional development.

## CONCLUSIONS

The study showed the importance of a deeper investigation of the mechanisms of formation of professional motivation of students of transport educational institutions, as well as of the search for opportunities for more intensive «immersion» of students in a real professional environment that forms an adequate image of their profession. The study of students' personal motivators will make it possible to systematise their professional expectations into a holistic image of the profession that exists in the minds of students, to correlate it with professional realities and organise work for a more detailed study by students of the niceties, opportunities and limitations of the future profession, style of professional behaviour, regulations, features of encouragement of employees, etc. This will allow future specialists to quickly adapt to the niceties of the chosen profession, to avoid disappointment due to minor difficulties, and to optimally organise their professional life, taking into account the requirements of the profession.

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